Birds of Power in the Ancient Southwest

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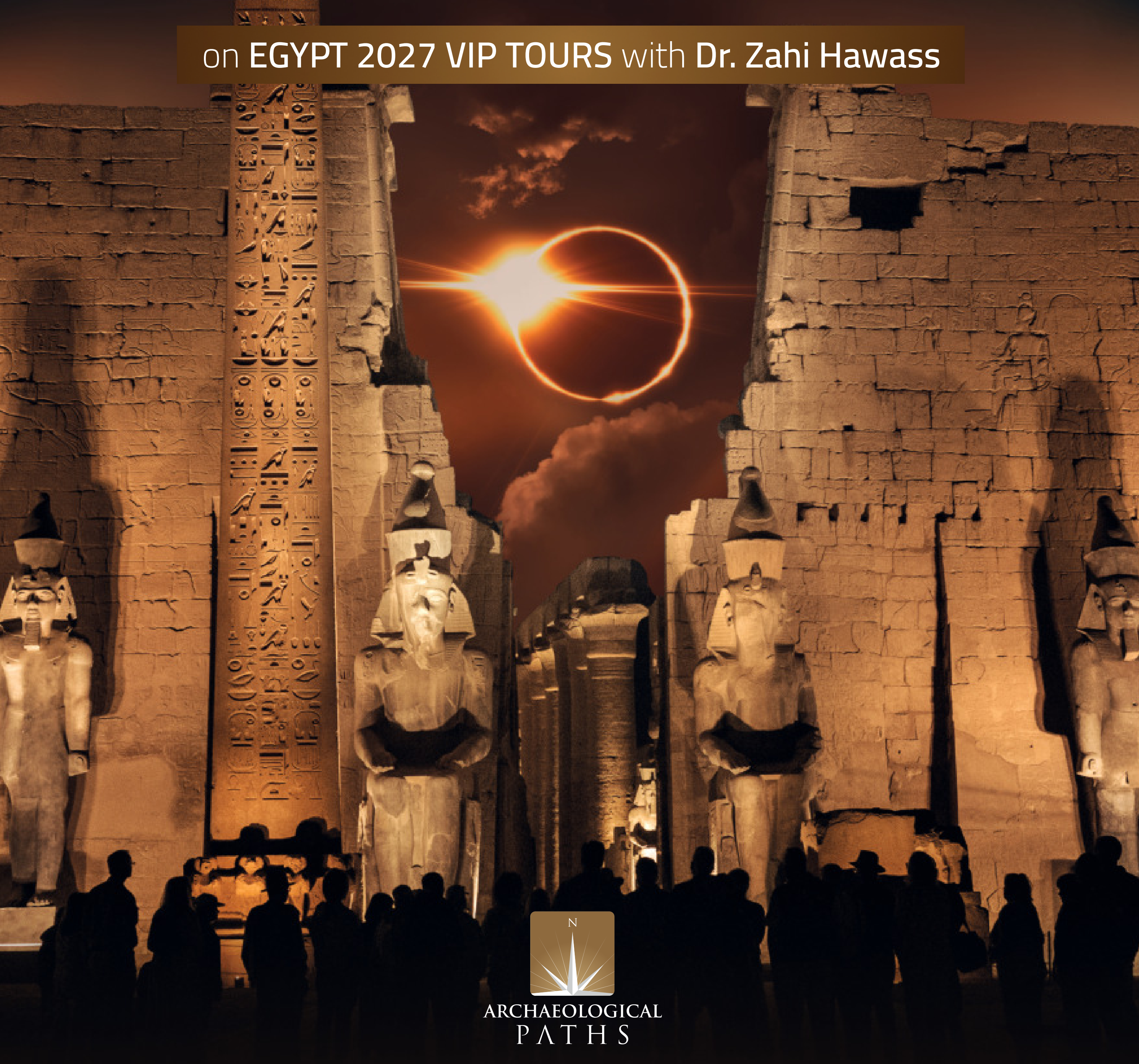

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PHOTO: Courtesy John Garton

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EDITOR'S LETTER

CONSIDER THE SOURCE

Often in these pages you will read about scholars wrestling with how to interpret patchy or incomplete written accounts left by the people whose lives they are trying to reconstruct. Sometimes, as in the case of Colonial Williamsburg, those records can be robust but still leave significant gaps. For instance, documents pertaining to the lives of enslaved people and their descendants in the colonial capital are sparse, but archaeological evidence coupled with oral history can help researchers tell the stories of people who traditional histories have overlooked.

The Norse descendants of the Vikings wove together history and mythology in works known as sagas, mostly in the thirteenth century. These epics purport to be biographies of their illustrious ancestors. Yet the historical accuracy of these accounts is questionable, and they do little to fill in the details of the daily lives or even some of the most important rituals of the Vikings. In fact, the only written account of a Viking royal funeral was penned by a tenth-century traveler who witnessed one such event firsthand deep in what is today Russia—although his report, too, is of debatable veracity.

There are, of course, people such as the Hittites of Bronze Age Anatolia who left copious records of their beliefs, rituals, and history. One Hittite ruler even wrote an autobiography. Archaeologists have found thousands of Hittite clay tablets, some of which have helped them to identify the location of Nerik, the most sacred site in the Hittite world, after decades of searching for this revered sanctuary.

Sometimes archaeologists have no contemporaneous written records about a culture because, even if they did once exist, they do not survive. While Renaissance Italians left behind an extensive body of written work—and you will read about some clever literary allusions in the tale of a strange and wonderful garden 55 miles north of Rome—scholars have been unable to find many documents relating to what inspired the creator of the Sacro Bosco, or Sacred Wood, or what must have been the almost supernatural experience of visiting the park in the mid-sixteenth century.

And, some ancient peoples' records are just too faded to read, including the name of a pharaoh from a lost ancient Egyptian dynasty that, after millennia in the sand, can no longer be deciphered, leaving this ruler's identity unknown.

Jarrett A. Lobell
Editor in Chief

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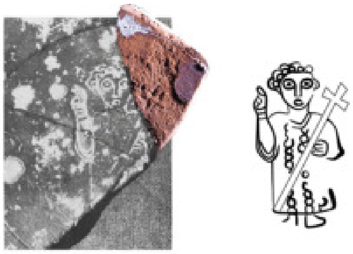
FROM THE PRESIDENT

ARCHAEOLOGY MATTERS

My summer fieldwork in Sicily is dedicated to surveying and recording ancient, historic, and contemporary wrecks along the coast of the island and conducting ongoing research on excavation finds. Recently, while studying the ceramics we had uncovered on a Byzantine shipwreck at Marzamemi that carried 100 tons of marble destined for the construction of a church, our team made an amazing discovery. Examining a fragment of a bowl decorated with a tiny cross, we realized that this cross completed the staff held by a priest depicted on a bowl found by archaeologist Gerhard Kapitän, who worked at Marzamemi some 50 years ago. Together with the ship's architectural cargo, this bowl's symbolism reflects age-old connections among international trade, religion, the state, and the daily lives of the people charged with sustaining these institutions. Without support for projects like ours from funding agencies such as the National Endowment for the Humanities (NEH) and nonprofit organizations including the Archaeological Institute of America (AIA), discoveries such as this are not possible, and knowledge about the human past may be lost.



Priest image, Marzamemi shipwreck

Over just the past decade, NEH funding has supported a team excavating the harbor of Methone, a city in the northern Aegean, where interactions among merchants in the first millennium B.C. may have led to the rise of the Greek alphabet. Near my own home, an NEH grant supported archaeological and archival research into the early nineteenth-century story of the Cataract House hotel in Niagara Falls, New York, whose employees ensured safe passage for freedom seekers along the Underground Railroad. The NEH has provided support for authors writing about the complex history of Jewish resistance at Masada, the mountain fortress built by Herod the Great near the Dead Sea, and about Sacagawea, the Shoshone woman whose intimate knowledge of the landscape was essential to the explorations of Lewis and Clark. It has funded educational opportunities for teachers to explore how 10,000 years of human activity at Chaco Canyon in New Mexico helped to shape our world. The NEH has also supported the creation of digital archives of irreplaceable archaeological collections and immersive 3D environments reproducing spaces including the pyramids of Giza and the privies of Boston. It has allowed for new museum exhibits inspiring lifelong learning about the global cultures that preceded ours and new ways to protect the world's heritage for the future. These are only a fraction of the projects supported by the NEH, some of which have recently seen their funding canceled. The AIA supports the NEH's mission to uphold the building blocks of civil society through research, scholarship, public engagement, and the preservation of cultural heritage—now and into the future.

Many NEH-funded projects reflect the work of professional members of the AIA. I know you enjoy reading stories about them in ARCHAEOLOGY magazine. At this critical moment, help us continue our mission to excavate, educate, and advocate for the importance of archaeological research. Please visit archaeological.org/donate to contribute today.

Elizabeth Greene

Elizabeth S. Greene
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FROM OUR READERS

PIG TALES

Your March/April 2025 "Letter from the Levant: On the Origin of the Pork Taboo" doesn't mention pigs or hogs eating the dead, which happened in some protracted American Civil War battles. If you knew your pigs or hogs had not partaken, they would be fine. Pork is a wonderful meat. But if you couldn't be sure, or if you had seen it happen, you may have supported a taboo. Imagine ancient boar hunting to eliminate a monster instead of for a great meal. The theory of Judeans losing their pastoral identity by raising pigs is an excellent point along with the raw pork health issues. Your magazine is a wonderful source of inspiration and information—please keep up the fantastic work.

David Turner
Jacksonville, FL

Thank you for the detailed article about how boars were domesticated into pigs as part of research into where the history and prohibition of eating pork by Jews and Muslims originated. It seems to me that the prohibition against eating swine had more to do with the difficulty authorities had collecting taxes on pigs compared to other animals. Marketing and propaganda techniques to encourage people to eat cows, sheep, lamb, etc., instead of pork by promoting "word on the street" that only low-class people ate pork may be traced to the desire to collect taxes. As the article points out, trichinosis only occurs if pork is undercooked, yet other animals, like poultry, can cause illnesses if undercooked, too.

James Boak
Bremen, ME

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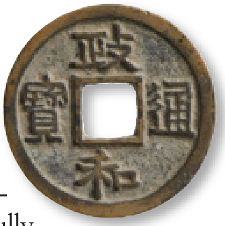
COIN OF THE REALM



I always love reading Archaeology, particularly when there are coins displayed that aren't fully described. It gives me a chance to research a coin, the details of which can often help date an excavation level. The article "Lost City of the Samurai" (May/June 2025) displayed a coin on page 33 that I thought some of your readers may enjoy knowing more about.

While the Japanese imitated this type of coin, which they called a *bita sen*, the coin displayed is indeed one imported from China. The Japanese bita sen are rare, while these Chinese coins are very common. The Chinese coin displayed was cast by Chinese emperor Huizong (reigned 1101–1125) of the Northern Song Dynasty. The Chinese characters, read from top to bottom, then right to left, present the ruling title and royal issuing authority of the emperor. The Chinese coins are blank on the reverse, but the Japanese imitative types may have included the script *sei wa tsu ho* ("sexual harmony and support") on the reverse. This Chinese coin found in Ichijodani was likely minted about 450 years before Oda Nobunaga burned the city to the ground.

James T. Martin
Hereford, AZ

CONQUERING THE CLASSROOM

It is exciting to connect people and places to amazing artifacts. This shows the true history and life stories of items left behind. In my world history class, we recently learned about the Battle of Hastings fought in 1066 between William the Conqueror and Harold Godwinson. In your May/June 2025 issue, the article "The King's Throne" revealed that archaeologists have located the home of Harold Godwinson. After examining different scenes on the Bayeux Tapestry and reviewing Harold's old residence there, it was exciting for my class to look up his real-life home and investigate where he lived before the battle took place. This helps them connect these stories to real life and real people. Archaeology enhances learning so much!

Claire Hoffman
Huntsville, AL

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DIGS & DISCOVERIES

FIRST FARMERS HEAD EAST, BYZANTINE HOLY BINDINGS, SCULPTURE SCENTS...AND MUCH MORE

LEGEND OF THE CRYSTAL BRAIN

Cast of Vesuvius eruption victim

When most people envision the victims of the eruption of Mount Vesuvius in A.D. 79 that destroyed the cities of Pompeii and Herculaneum, they think of the casts of their bodies made by pouring plaster into voids left by their decaying corpses. Yet not all the physical remains of those who perished in the cataclysm decayed. In one case, a remarkable transformation occurred—a man's brain turned to glass.

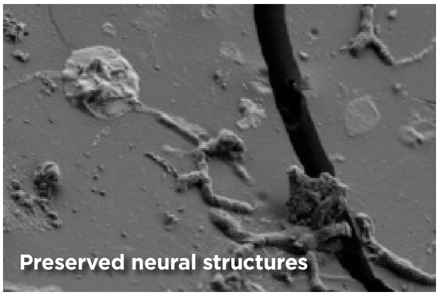
Human tissue is composed largely of water. Thus, explains forensic anthropologist Pier Paolo Petrone of the University of Naples Federico II, when exposed to intense heat, it vaporizes. Exposure to the extreme heat of a volcanic eruption should completely destroy the soft tissue of any living organism in its path. At sites across the world, a relatively small number of human brains have been preserved through saponification, a natural process by which human tissue transforms into triglycerides that are then converted to glycerol and fatty acids, or soap. On rare occasions, human brains have been preserved by dehydration, tanning, or freezing. But, says volcanologist Guido Giordano of Roma Tre University, this is the only example of a vitrified brain—or, indeed, vitrified tissue of any sort—in the archaeological record. Scientists long believed that the only way tissue could become vitrified was by exposure to very low temperatures, or cryopreservation. This was clearly not what occurred during the scorching eruption.

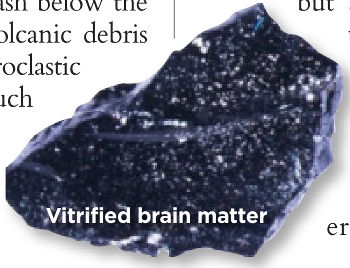
In the 1960s, the skeleton of a young man about 20 years old was found covered in ash lying on his wooden bed in the College of the Augustales, home of the cult of the emperor Augustus (reigned 27 B.C.–A.D. 14). The man may have been the guardian of this important building, located on Herculaneum's main east-west street, and had perhaps refused to abandon his post. As many of his fellow citizens fled to the beach, he stayed behind and died. His body—or most of it—became carbonized. In 2018, during a survey at the college, Petrone discovered some fragments in the man's skull. These shiny, black pieces resembled obsidian, the type of volcanic glass created by rapidly cooling lava. Two years later, Petrone and Giordano looked at scanning electron microscope images of the contents of the man's skull. "It really does look like glass," says Giordano. "But, looking like glass doesn't mean it really is glass, and considering there are no other examples of this happening, we were very cautious not to make any fast interpretations."

Mount Vesuvius, southern Italy

Petrone was able to take samples of the material in the man's skull and, with Giordano, started to investigate what conditions might have caused his brain and parts of his spinal column to turn to glass. They found that the brain had vitrified after being heated to well above 950 degrees Fahrenheit—a temperature produced by a short-lived pyroclastic flow, or surge of superheated ash—and then cooled very rapidly. “Perhaps the cerebral tissue was protected by the thick bones of the man’s skull and spine,” says Petrone. “This may have helped to prevent complete destruction of his brain tissue.”

Evidence of this ash cloud survives only as an inch or so of ash below the more than 100 feet of volcanic debris deposited by the main pyroclastic surge, which covered much of the region, stretching as far as 15 miles from the volcano. But, says Giordano, the significance of this thin layer of ash has not been fully understood. The man’s vitrified brain is not only a remarkable phenomenon, but also provides previously unknown details of what happened during the eruption’s initial stage. “This is a fundamental breakthrough in our understanding of the eruption,” says Petrone. “In contrast to earlier assumptions, we now know that the first pyroclastic flow entered the city at a very high temperature, capable of instantly killing all those still there, and then rapidly cooled down.”


Preserved neural structures


Vitrified brain matter

For Petrone, what was perhaps even more stunning than the vitrification was the recognition that inside the glass were neurons and axons, the basic units of the central nervous system, as well as other neural structures. “Seeing all those perfectly preserved and exceptionally visible microstructures brought on a unique emotion, unrepeatable for its extraordinariness,” he says. “We were looking into the brain of that young Roman who lived 2,000 years ago—a brain that, perhaps, held his last thoughts before dying.”

—Jarrett A. Lobell

BOUND FOR HEAVEN

During excavations of a Byzantine monastery in 2017 just north of Jerusalem’s Old City, a team led by Israel Antiquities Authority archaeologists Zubair ’Adawi and Kfir Arbiv discovered an unusual burial in a crypt beneath the altar of the complex’s church. The rock-cut tomb contained the remains of a person whose limbs had been bound with iron rings. Some dozen rings were wrapped around each of the individual’s arms, 10 on each leg, and four around the neck. Attached to the rings were iron plates that lay on the deceased’s stomach. This form of punishment was self-inflicted and was a common practice among Christian ascetic monks, who believed bodily affliction could allow them to attain a higher degree of spirituality. “From Byzantine written sources, we know that this phenomenon started in Syria and then expanded north to Anatolia, west to Greece and Italy, and also reached England and France,” says ’Adawi. However, only two other burials of chained monks have been uncovered in excavations—one in Egypt and another near a different monastery in Jerusalem.

Burial excavation, Israel

Because the deceased’s bones were so poorly preserved, a single tooth turned out to be the only way to determine the individual’s sex. A team from the Weizmann Institute of Science led by archaeological scientist Paula Kotli employed amelogenin peptide analysis, a method that involves studying proteins extracted from tooth enamel that can indicate a person’s sex. They discovered that the chained individual was in fact a woman. She was between the ages of about 30 and 60 and was buried in the fifth century A.D. While historical records primarily cite cases of ring binding among religious men, this nun is one of several women known to have wrapped themselves in chains. In his *Religious History*, which relates biographies of ascetic monks, the fifth-century A.D. theologian Theodoret of Cyrrhus includes two holy women, Marana and Cyra, who donned heavy iron rings and chains as part of their devotion to a life of extreme self-abnegation.

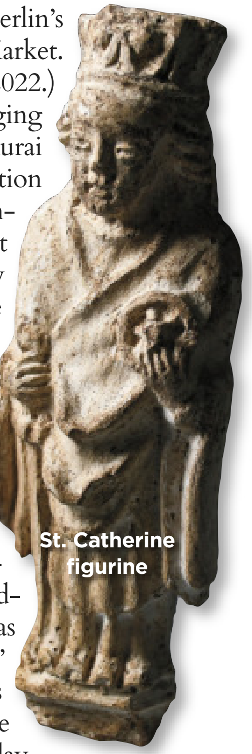
—Benjamin Leonard

SAINTS ALIVE

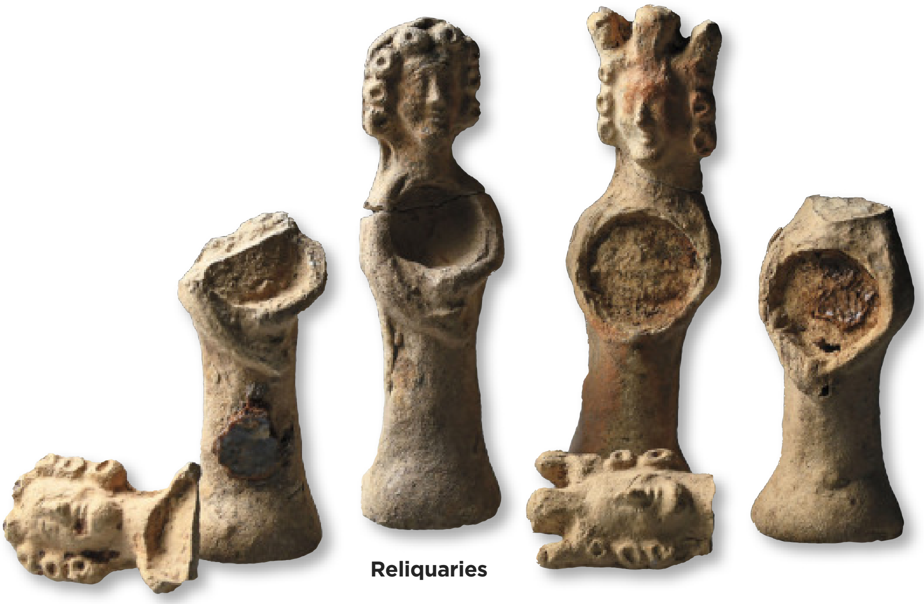
Since 2019, archaeologists have been excavating in Berlin's oldest square, known as the Molkenmarkt, or Whey Market. (See "Berlin's Medieval Origins," September/October 2022.) Thus far, they have unearthed more than 600,000 artifacts ranging from coins, jewelry, and shoes to a seventeenth-century samurai sword. Recently, the team working in this enormous excavation area, which measures 1.6 acres, uncovered 188 mid-fourteenth-century clay figurines representing women, each only about three inches tall. "Such a large number of figurines, especially in an undisturbed context, is unparalleled, not only in the German-speaking world, but almost throughout Europe," says archaeologist Eberhard Völker of the Berlin Heritage Authority. A cavity in the center of each figurine contained splinters of bone, leading researchers to suggest that the objects served as reliquaries to hold the bones of venerated Christians. "They can be interpreted as evidence of growing popular piety," Völker says.

Alongside the reliquaries, archaeologists found a four-inch-tall white clay statue of Saint Catherine dating to the mid-fifteenth century. "In the late Middle Ages, Saint Catherine was particularly popular as an emergency helper and patron saint," Völker says. The saint carries a sword and a wheel, attributes of martyrdom, and is crowned with spikes as a symbol of divine marriage. The team also found a headless 3.4-inch-tall white clay figurine depicting the Madonna handing an apple to the baby Jesus. "Both figures of saints," says Völker, "are extremely rare finds that allow a small insight into the civic piety of the late Middle Ages."

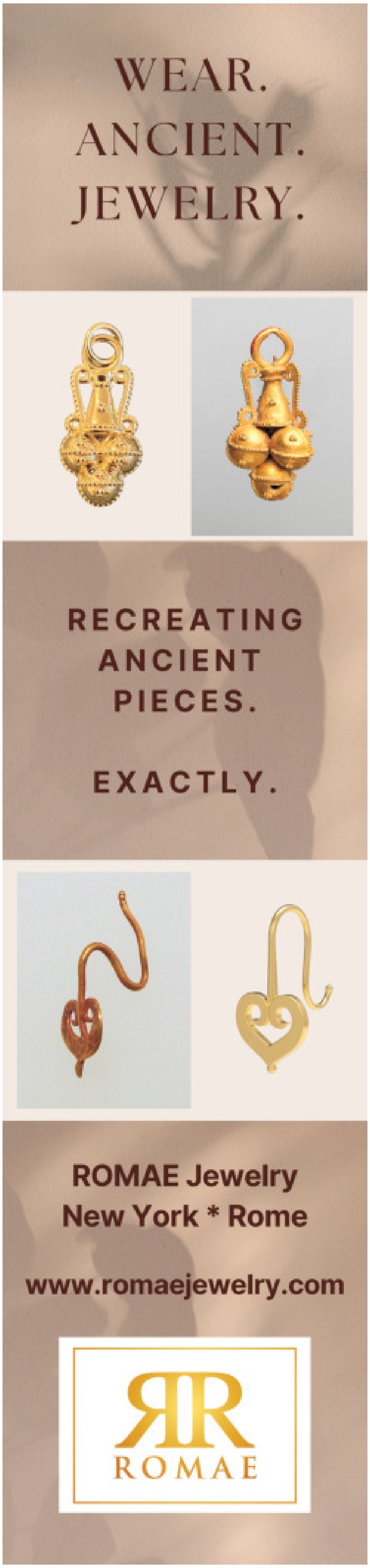
—Jarrett A. Lobell



St. Catherine figurine



Reliquaries



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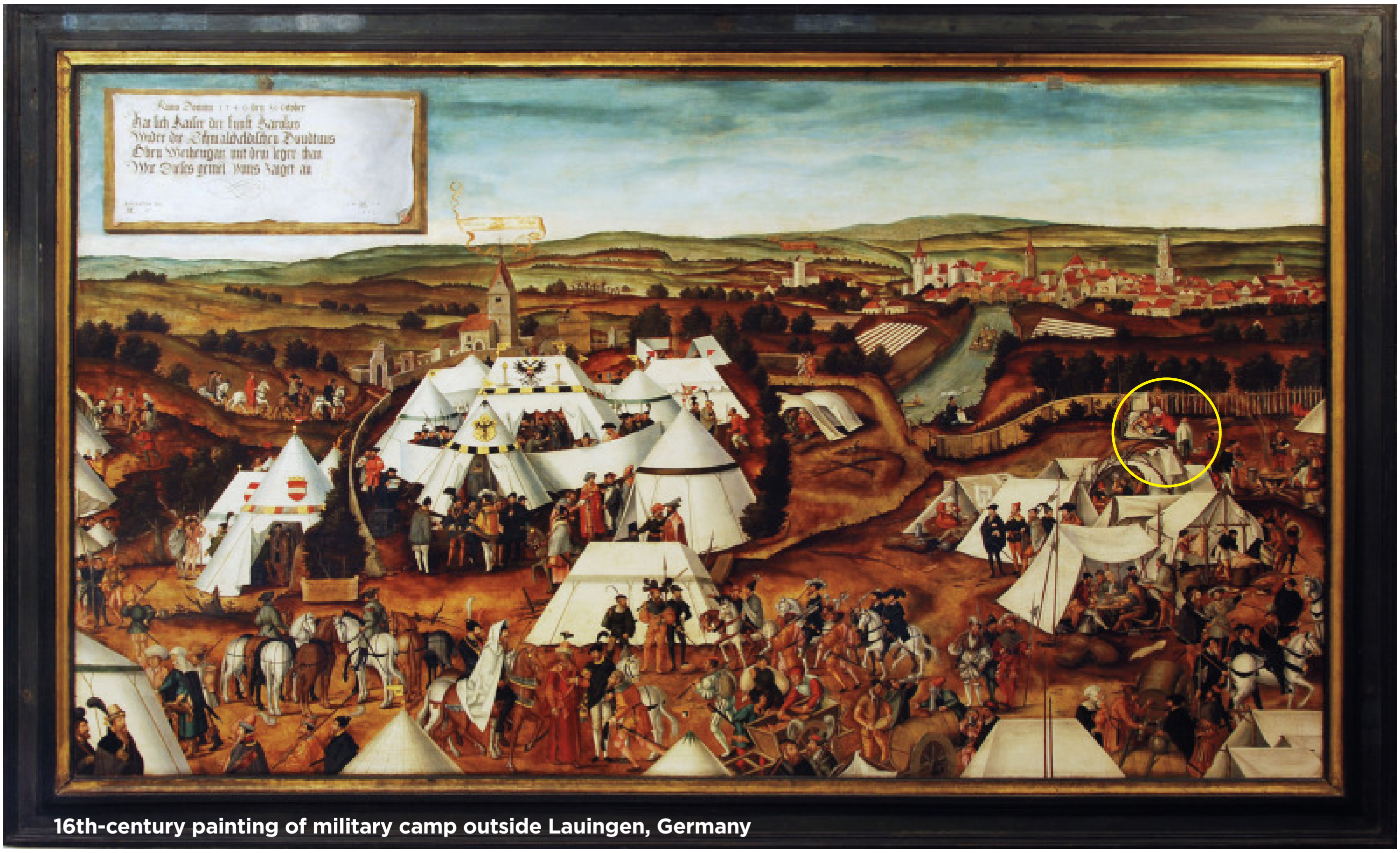
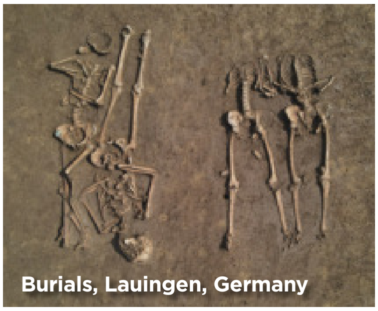


16th-century painting of military camp outside Lauingen, Germany

The Schmalkaldic War, which began in 1546 and lasted less than a year, pitted the forces of the Holy Roman emperor Charles V (reigned 1519–1556) against the Schmalkaldic League, a Protestant alliance formed by German principalities and cities within the empire. The conflict was fought largely by a new breed of warrior—mercenaries trained to fight in large infantry formations. "While these troops were the backbone of all military operations, we know next to nothing about the individuals within these armies," says archaeologist Johann Friedrich Tolksdorf of the Bavarian State Office for Monument Protection. Evidence of the grim fate that awaited many such soldiers has now emerged from excavations in the town of Lauingen. Archaeologists have discovered the shallow graves of four young men buried with coins whose dates suggest that the men perished during Charles' siege of Lauingen, which was allied with the Schmalkaldic League.

16th-century coins



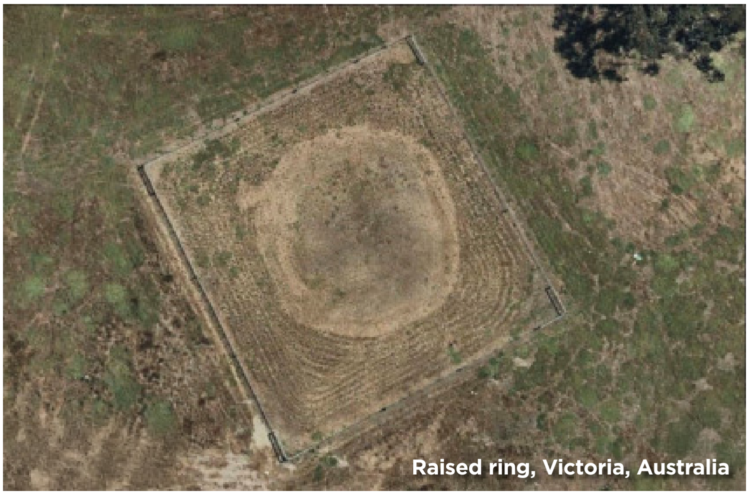
Burials, Lauingen, Germany

The burials were found next to the site of Charles' military encampment on the banks of the Danube River outside Lauingen, a setting depicted in a sixteenth-century painting that hangs in the town museum. Amid the painting's martial splendor, a gravely ill soldier receives medical attention, an experience likely shared by those buried in the graves. Despite the men being only in their late teens, their bones bore dramatic signs of stress and attrition. "This supports the historical sources for this campaign, which reported incredibly long marching distances," says Tolksdorf. How the men died is unknown, though it's possible disease and the elements, rather than their Schmalkaldic League enemies, sent them to an early grave. On November 8, 1546, a Venetian diplomat who traveled to Lauingen with Charles' army wrote: "There is great cold and continuous rain, due to which there is mud up to half a leg throughout the camp, and every day many people fall ill and die.…I see that now we are fighting more against the cold and the hardships than against any other enemy."

—Eric A. Powell

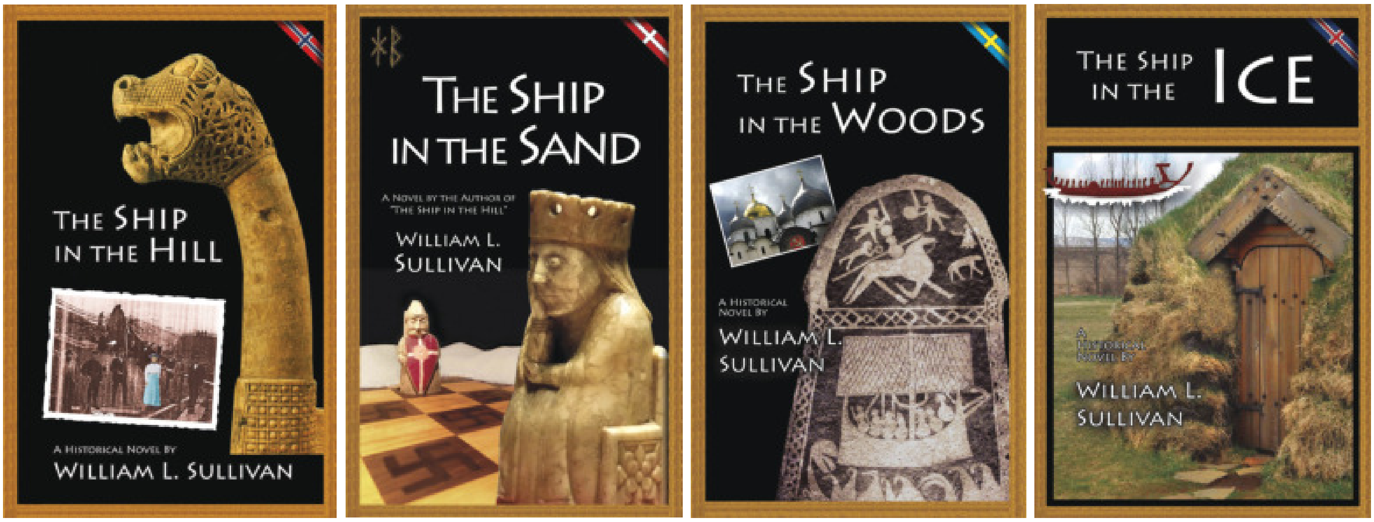
ANCESTRAL RINGS

Archaeologists have questioned who made five raised rings in the southeastern Australian state of Victoria. Some have proposed that the 65-foot-wide rings, located in what is now the Melbourne suburb of Sunbury, resulted from postcolonial military or agricultural activity. Scholars now believe the rings were constructed by Ancestors of Woi-wurrung–speaking people, who are the Traditional Custodians of a large swath of the south-central region of Victoria. Such raised rings have a deep history, but only around 100 are thought to remain in eastern Australia today.


Raised ring, Victoria, Australia

In 1979, archaeologists excavating one of the Sunbury rings unearthed 166 stone artifacts, but the objects weren't analyzed in detail. A team of Wurundjeri Woi-wurrung Elders working with researchers led by archaeologist Caroline Spry of La Trobe University has now reopened the excavation trench and reexamined the previously unearthed artifacts. Using optically stimulated luminescence dating, they determined that the ring was constructed and maintained between 1,400 and 590 years ago, confirming that it was created by Aboriginal people. According to the Wurundjeri Woi-wurrung Elders, the Sunbury rings were a meeting place, an area of abundant resources, and a stop along an important travel route. Archaeology, coupled with traditional cultural knowledge, the Elders say, can help improve understanding of the function of the Sunbury rings.

—Ilana Herzig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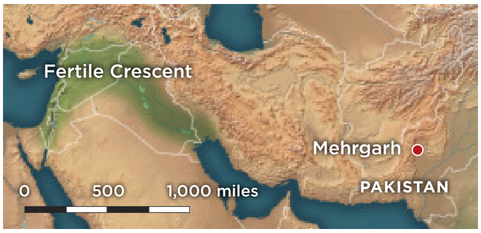
NEOLITHIC NEOPHYTES

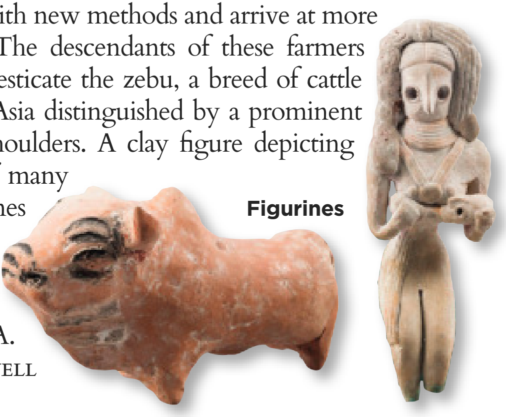
An overwhelming body of archaeological evidence suggests that people first began farming around 9500 B.C. in the Fertile Crescent, which stretches from the Arabian Gulf to the Mediterranean. But scholars are still uncertain how agriculture spread across the rest of Asia. The ancient village of Mehrgarh in Pakistan, which is one of the few extensive early Neolithic sites east of the Fertile Crescent to have been excavated, has loomed large in this debate. Archaeologists who dug at the site in the 1970s believed the settlement dated to 8000 B.C. This is far earlier than any other Neolithic site lying between it and the Fertile Crescent, suggesting that people in what is now Pakistan may have developed agriculture independently. "Mehrgarh always stood out as a unique site," says archaeologist Benjamin Mutin of Sorbonne University.



Excavations, Mehrgarh, Pakistan

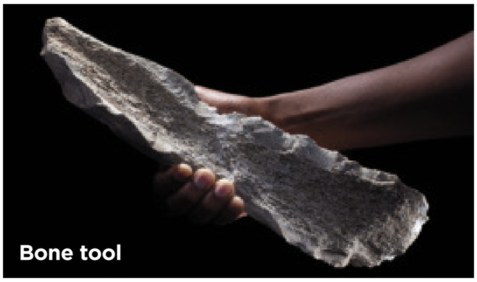
Recently, Mutin and geochemist Antoine Zazzo of the National Museum of Natural History in Paris led a team that used new methods of radiocarbon dating to analyze tooth enamel from 23 Neolithic people buried at Mehrgarh. They determined that the earliest remains date to around 5000 B.C., suggesting that the settlement was likely founded by people who came from the west, where agriculture was by then well established. "This is the way science is supposed to work," says Zazzo. "You reinvestigate important sites with new methods and arrive at more precise results." The descendants of these farmers went on to domesticate the zebu, a breed of cattle native to South Asia distinguished by a prominent hump over its shoulders. A clay figure depicting a zebu is one of many distinctive figurines archaeologists have unearthed at Mehrgarh.

—Eric A. Powell


Figurines

THE BONE TOOLKIT

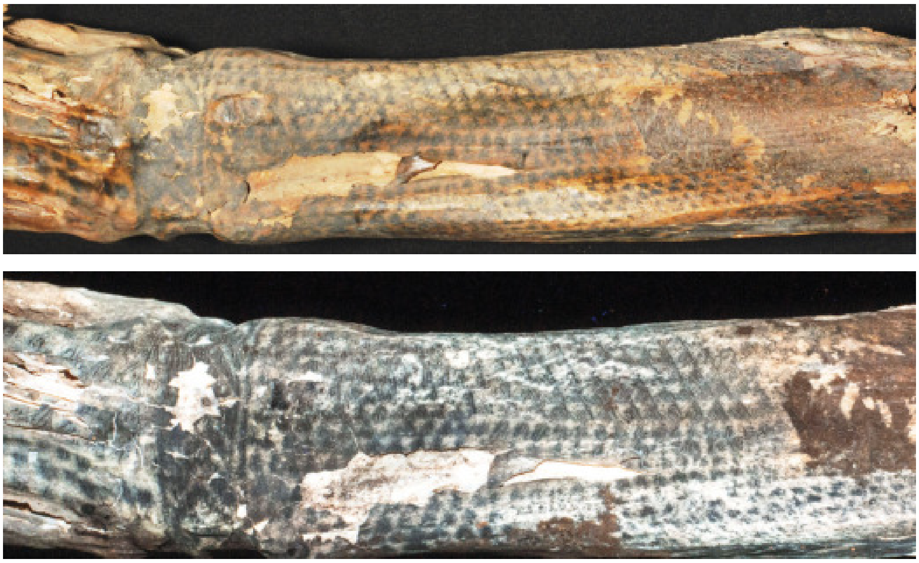
Researchers excavating at a site in northern Tanzania's Olduvai Gorge have unearthed bone implements made by human ancestors 1.5 million years ago. This is around a million years earlier than scholars had believed hominins regularly fashioned tools from bone. The team, which includes paleoanthropologist Jackson Njau of Indiana University Bloomington, discovered 27 bones, mostly parts of elephant and hippopotamus limb bones, that showed clear signs of having been worked and used as tools for chopping carcasses. All were found in the same geological layer and were likely crafted by toolmakers who belonged to the species *Homo erectus*. "These finds mark a pivotal moment in human history," says Njau. He emphasizes that the tools date to a period when hominins were transitioning from the relatively simple Oldowan tradition, which arose roughly 2.6 million years ago—the earliest stone tool industry—to the more sophisticated Acheulean tradition, which is characterized by large stone hand axes worked on both sides.


Bone tool

The team speculates that the toolmakers who fashioned the earliest Acheulean hand axes may have modeled them on heavy-duty bone tools such as the ones unearthed in the Olduvai Gorge, some of which are more than a foot long. If these human ancestors transferred techniques that they learned from working bone to creating stone tools, it would suggest they were more cognitively advanced than previously believed. Njau notes that there are many collections of bones found at other Olduvai Gorge sites from the same geological layer in which evidence of tool use might have been overlooked. "I plan to revisit these collections soon in hopes of uncovering even more insights," he says.

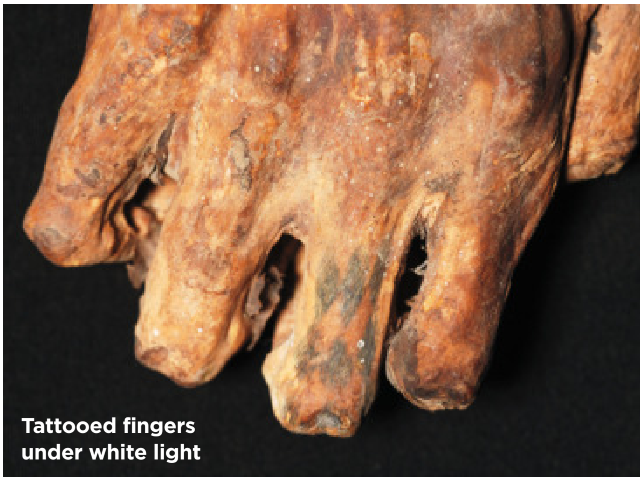
—Eric A. Powell

Tattoos under white light (below) and laser-stimulated fluorescence (bottom)



UNDER THE SKIN

People of the Chancay culture, who lived along Peru's central coast from around A.D. 900 to 1533, tattooed their skin with intricate geometric designs and images of animals. Some of this artwork is preserved on the skin of mummified Chancay individuals, but the ink has bled and faded as the bodies have decayed over the centuries. This has obscured the designs' original clarity. A team of researchers led by paleobiologists Michael Pittman of the Chinese University of Hong Kong and Thomas G. Kaye of the Foundation for Scientific Advancement has devised a novel way to examine ancient tattoos on mummified human remains and has used it on examples uncovered in 1981 at a necropolis in Peru's Huaura Valley. The method, called laser-stimulated fluorescence, causes preserved skin to glow bright white and increases the contrast between the skin and the ink. This effectively eliminates the blurring effect of the ink bleed, making the outlines of the tattoos appear much more clearly. The team was able to discern exceptionally fine details that were impossible to see under white light or even using infrared imaging. These details include lines less than one hundredth of an inch wide that Chancay artisans hand poked with needles to create a pattern of repeating triangles. In some cases, the rendering of these designs is even more precise than similar geometric motifs found on Chancay textiles and representations of tattoos on anthropomorphic ceramic figurines.



Tattooed fingers under white light

—Benjamin Leonard

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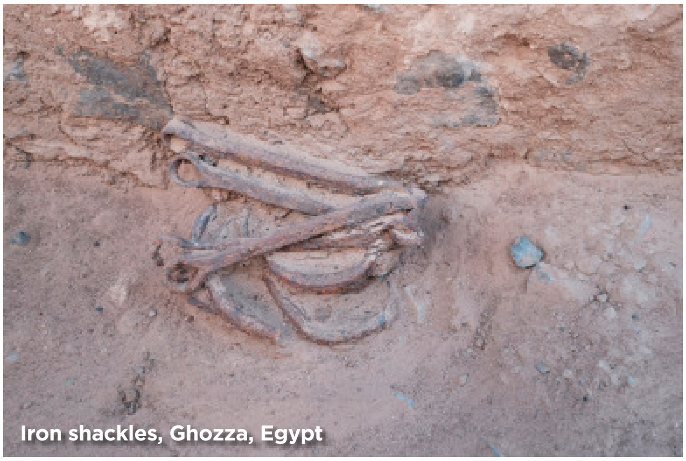
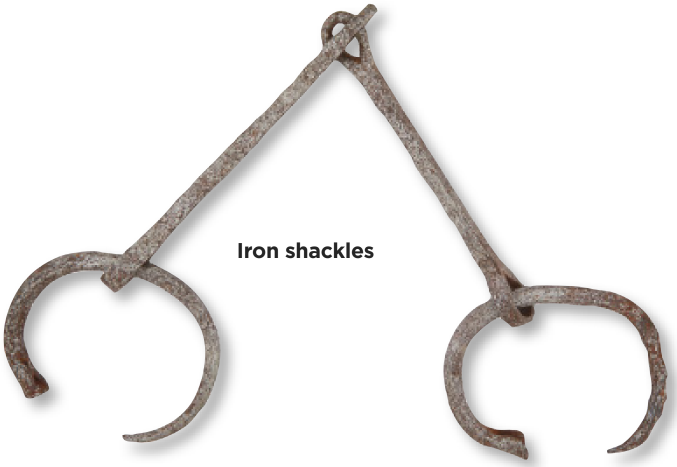
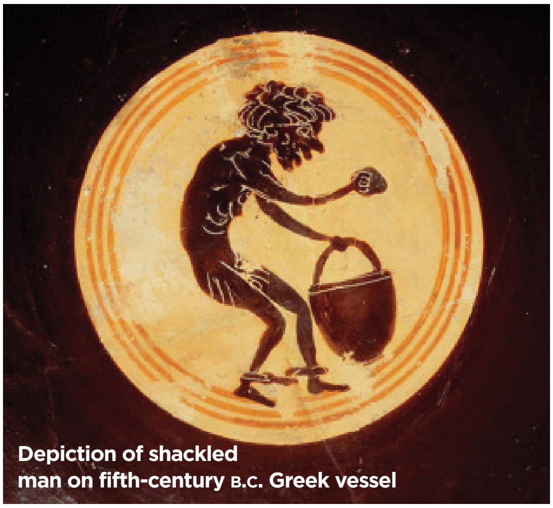


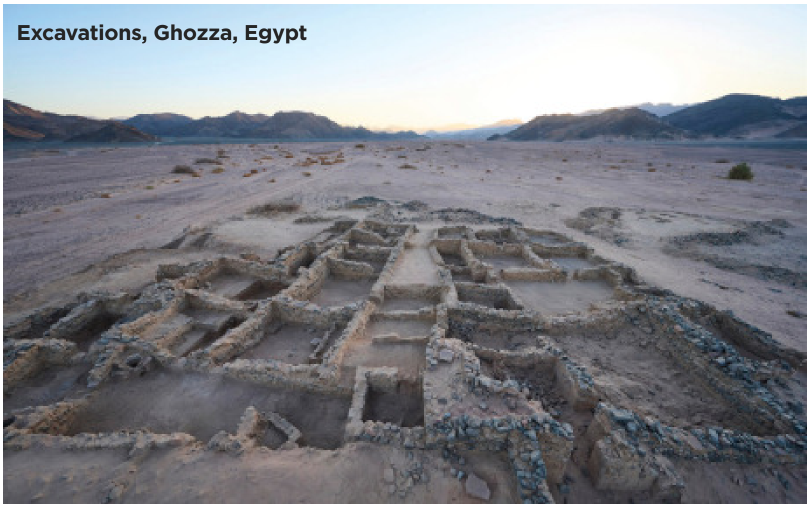
Iron shackles, Ghozza, Egypt



Iron shackles



Depiction of shackled man on fifth-century B.C. Greek vessel



Excavations, Ghozza, Egypt

MINERS' MISFORTUNE

Archaeologists working in Egypt's Eastern Desert have unearthed evidence of the harsh treatment endured by some Ptolemaic-era miners. Egypt's gold mines were a coveted source of wealth for its rulers for more than 2,000 years. Mining was particularly intensive at the beginning of the Ptolemaic period (304–30 B.C.), when the first Ptolemaic pharaohs required gold to fund military campaigns and building projects. As many as 40 mines were opened at this time, including one at the site of Ghozza that dates to the second half of the third century B.C. Recent excavations there have uncovered parts of an extensive mining town, including streets, residential areas, administrative buildings, and even baths. Several ostracons—fragments of pottery that contain writing—found at Ghozza indicate that some workers were paid wages, but a discovery made elsewhere at the site suggests that others were not. In a storage building, archaeologists found two sets of shackles they believe were fastened around the ankles of unfortunate miners. This would have left the miners' arms free to carry out their work, but would have severely hindered their ability to walk. "The presence of shackles indicates that part of the workforce was not free," says Bérangère Redon, an archaeologist at France's Laboratoire HISOMA. "The ones that we found are permanent—they cannot be removed once they have been hammered around the individual."

These iron restraints are among the oldest that have been found in the Mediterranean. Their discovery seems to confirm a report from the second-century B.C. writer Agatharchides that some Ptolemaic gold mines were staffed by prisoners of war, convicts, and enslaved individuals: "And those who have been condemned in this way—and they are of a great multitude and all have their feet bound—work at their tasks unceasingly both by day and throughout the entire night."

—Jason Urbanus

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WAX ON, WAX OFF

Ivory tablet

More than 400,000 clay cuneiform tablets survive from ancient Mesopotamia. But clay was not the only medium in which scribes created the wedge-shaped impressions of cuneiform script. Records dating to as early as 2000 B.C., as well as reliefs depicting scribes at work, suggest they also wrote on wax-covered tablets fashioned from wood or ivory. Unlike dried or fired clay, wax offered scribes the ability to easily update running accounts or edit their work by scraping or melting off a layer of wax. Very few of these wax-coated tablets have survived. Among the rare examples are 16 ivory tablets and fragments of perhaps the same number of wooden examples that were thrown down a well in the Assyrian capital of Nimrud when it was sacked by the Babylonians and their allies in 612 B.C.

Archaeologists discovered the cache of tablets, some of which were as long as 13 inches, in 1953. Analysis at the time suggested that the tablets bore traces of beeswax. Recently, a team led by chemist Diego Tamburini of the British Museum reanalyzed the Nimrud tablets using a suite of techniques that enabled the researchers to test minute quantities of the wax found on their surfaces. They confirmed that the substance was pure beeswax and found that the ivory tablets also bore traces of orpiment, an arsenic compound that was used as a yellow pigment. “It would have given the wax on the ivory tablets a golden appearance,” Tamburini says. This suggests that the writing on these tablets may have been of special significance to the scribes of Nimrud. The team also found traces of carbon black on the wooden tablets, which shows that the scribes added soot or ash to the wax on those boards to improve readability and make the wax less sticky and easier to write on.

—Eric A. Powell

Wooden tablet fragment

Assyrian relief showing scribes

SCENT OF A STATUE

Despite their current shining white appearances, ancient Greek and Roman statues were once painted in vivid colors and richly decorated with textiles and jewelry. New research shows they may also have been doused in perfume. Drawing on evidence dating from the second century B.C. to the fourth century A.D., archaeologist Cecilie Brøns of the Ny Carlsberg Glyptotek studied the practice of seasoning ancient statues with spices. “Adorning statues with clothes or scents was all part of the process of honoring them, of making them come to life,” says Brøns. There is extensive archaeological evidence of perfume production in antiquity, including workshops on the Greek island of Delos and frescoes in Pompeii’s House of the Vettii depicting cupids extracting perfumed oil from rose or violet petals. For her study, Brøns consulted written sources, including the fifth-century A.D. Greek philosopher Proclus’ recollection of perfumed statues and the first-century B.C. Roman statesman Cicero’s description of the statue of Artemis in the Sicilian city of Segesta. “At the sanctuary of the goddess Artemis in Segesta, they carried the statue around the city, gave her flower wreaths and garlands, and perfumed her,” says Brøns. “This shows us how important scents must have been in this ritual, and gives us a sense of what it would have smelled like to attend these processions.”

—Ilana Herzig

Roman statue of goddess Cybele

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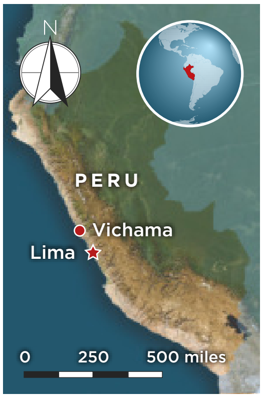
OFF THE GRID BY ILANA HERZIG

VICHAMA, PERU

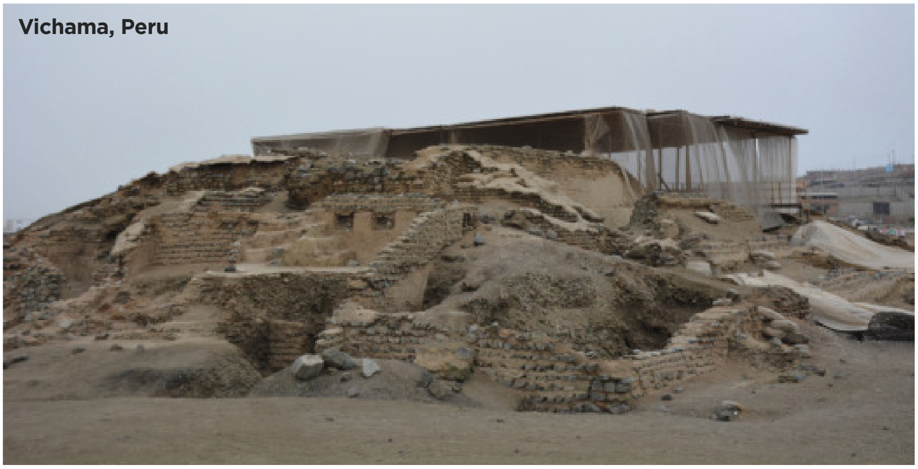


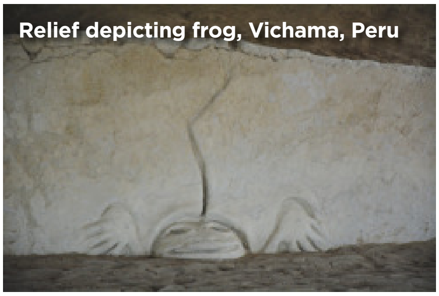
Along the rocky coastal bluffs overlooking the Pacific Ocean in northern Peru, a series of clay reliefs depicting humans and human-animal hybrids decorates the walls of the site of Vichama. Likely an ancient agricultural and fishing community, Vichama was inhabited by members of the Caral civilization between roughly 1800 and 1500 B.C. "Vichama existed within the ancient coastal traditions of this area," says archaeologist Lisa Trever of Columbia University. The people of Vichama were expert weavers, producing items including clothing and fishing nets from reeds. The site's name comes from an Inca myth that tells the story of a deity named Vichama who turns humans into rocks and islands. The Inca Empire ruled the area along with much of South America's Pacific Coast from the fourteenth to sixteenth centuries.

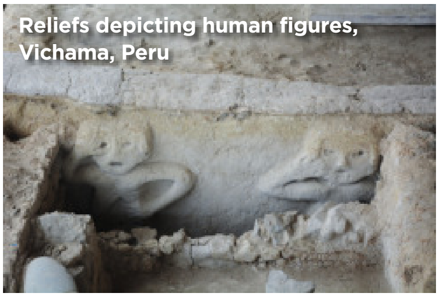
A team led by archaeologist Ruth Shady Solís of the National University of San Marcos, director of the Caral Archaeological project, began excavating the site's 16 mounds in 2007. They identified five pyramidal structures, which likely served religious and administrative purposes, interspersed with smaller residential buildings. The archaeologists also uncovered mussel shells, musical instruments, animal remains, and figurines made from unfired clay. Facades of some of the site's structures bear painted reliefs made of clay and grass that depict part-human, part-amphibian beings. "These strange, uncanny creatures are really unusual," says Trever. "In one, a frog seems to be coming out of the stone with cartoonlike hands. There's nothing else like that." The creators of the reliefs emphasized bodies that are often emaciated. Shady Solís believes that, given the skeletal appearance of the figures, the reliefs may have been made following a period of drought. Frogs, she thinks, represent water in Andean religions, and the one at Vichama lies below a possible representation of a lightning bolt, suggesting the relief may have been related to a rain ritual.

THE SITE

Vichama is nearly 100 miles north of the capital city of Lima, in the Végueta District of Peru's Huaura Province. It is the first monumental archaeological site to have been excavated in the district and is located within a sprawling ecological reserve near wetlands that are home to a variety of bird and fish species, as well as reeds used for weaving baskets. Although road-savvy visitors can rent a car, Trever suggests booking with a tour company and asking to detour from well-trodden routes to stop at Vichama and experience the reliefs in person.


Vichama, Peru


Relief depicting frog, Vichama, Peru


Reliefs depicting human figures, Vichama, Peru

WHILE YOU'RE THERE

During the two-to-three-hour drive from Lima on the Pan-American Highway, you'll pass farms and a stretch of northern Peru's stunning beaches dotted with the occasional restaurant. Visitors can glimpse dramatic cliffs and turquoise waters. Try to leave early and make a pit stop in Chancay, roughly halfway to Vichama. There, you can dine at Lomas Delpino, which, according to Trever, is a classic roadside restaurant. Vichama lies an hour from the inland site of Caral. This monumental complex dates to some 5,000 years ago and has been called the first city in the Americas.

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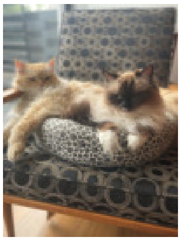
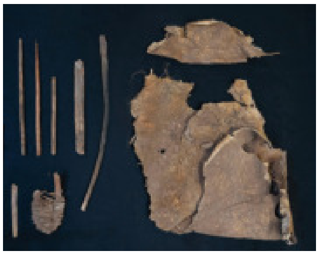
AROUND THE WORLD BY JASON URBANUS

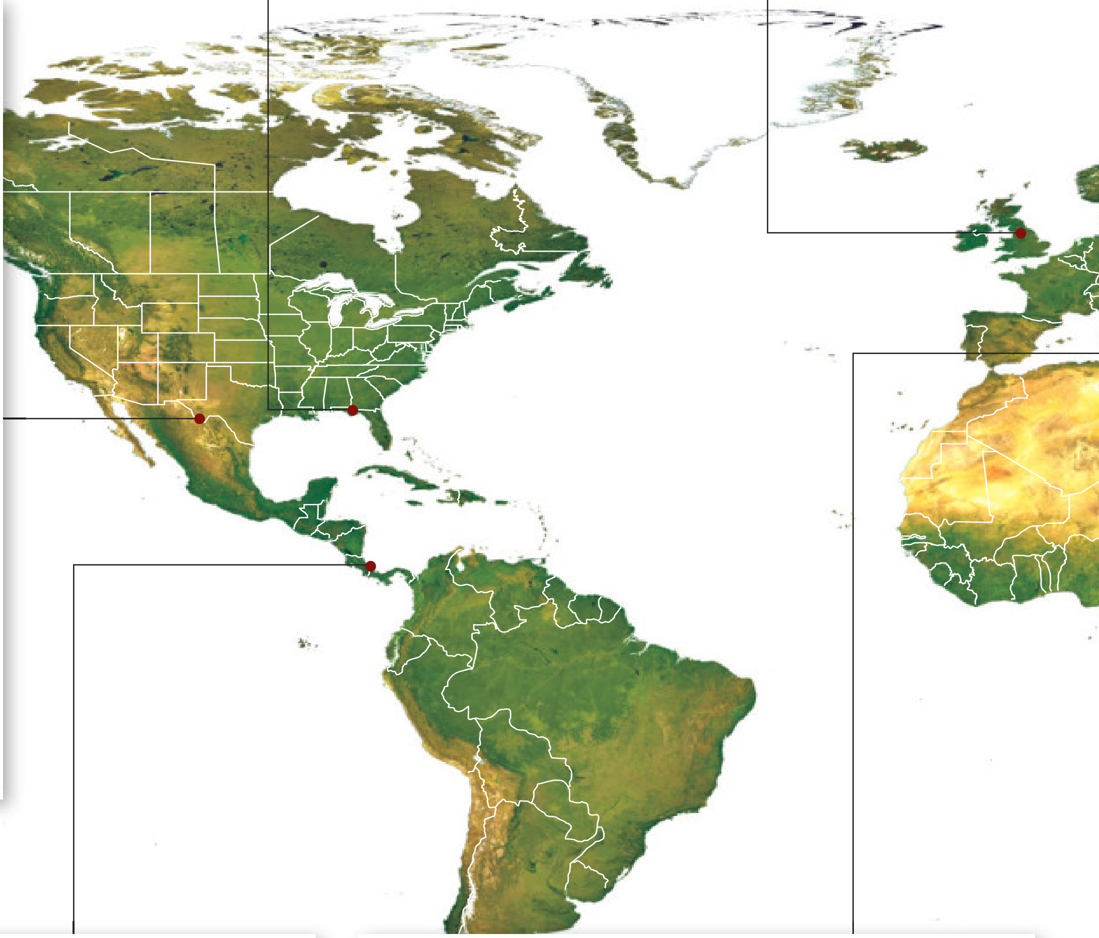


FLORIDA: Cats curl up on couches in 1/3 of all American households. However, domesticated felines are not native to the New World, but were introduced by Europeans. The earliest known cats in the present-day United States, an adult and a juvenile, have been identified in the wreck of a Spanish ship that sank at the site of Emanuel Point II in Pensacola Bay in 1559. Although the cats were likely brought aboard to feast on rodents, analysis of their diet indicated, surprisingly, that they dined much like the sailors.

ENGLAND: Scenes of gladiators battling exotic cats are common in the popular imagination. However, the only known physical evidence of such a contest comes from skeletal remains found in a gladiator cemetery in the city of York. Researchers recently noticed unusual marks on the pelvis of a combatant who died in the 3rd century A.D. They confirmed that the marks are consistent with puncture wounds caused by a big cat such as a lion and concluded that the man was probably a type of fighter known as a *bestiarius* who was taken down and dragged by his feline opponent.



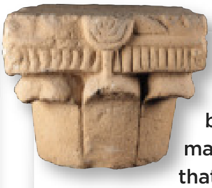
TEXAS: An Indigenous hunter sat by the fire in a cave 6,500 years ago and evaluated the state of his weapons, making repairs to some and discarding others. Over the past several years, archaeologists have collected the wood and stone equipment the hunter left behind in the San Esteban Rockshelter near Marfa. The arsenal consists of a boomerang, stone points, poisoned wood darts, and a type of spear-thrower called an atlatl. They make up the oldest nearly intact hunting kit found in North America.



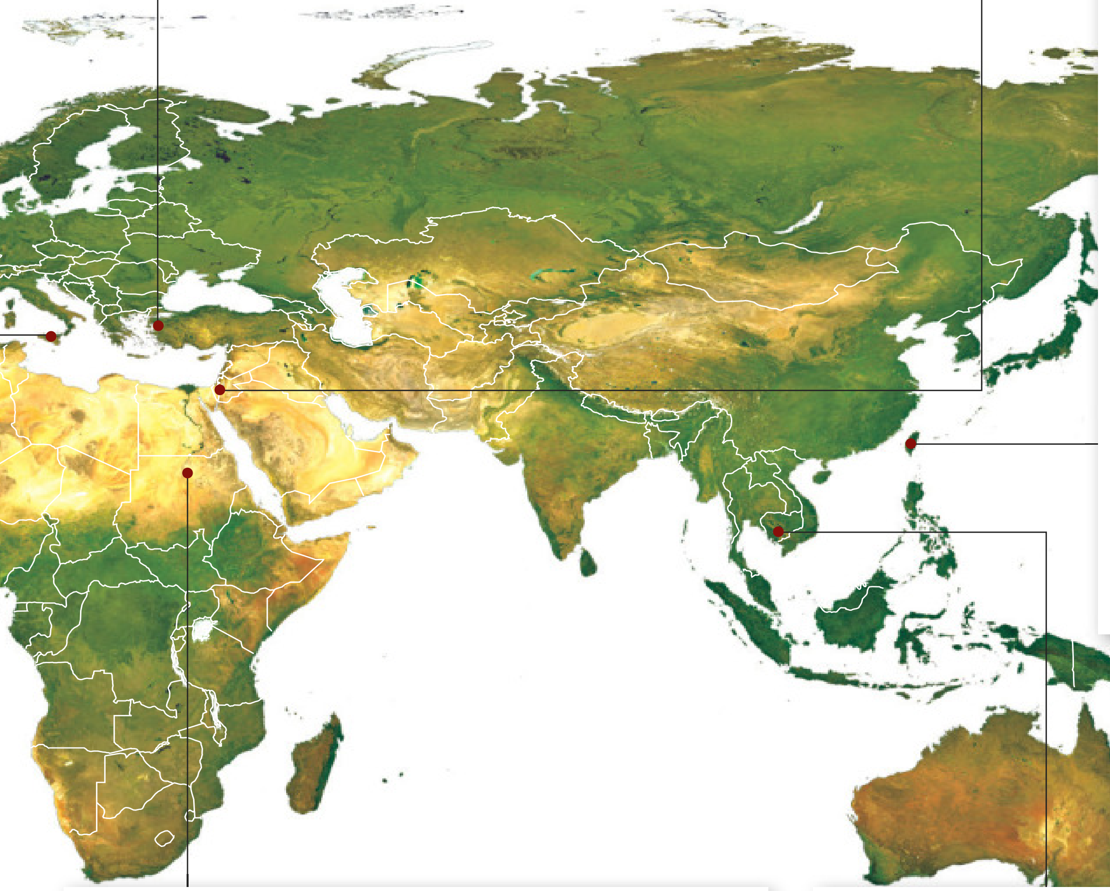
COSTA RICA: Two shipwrecks in the Caribbean Sea, previously thought to be pirate ships, were revealed to be the Dutch slave ships *Fridericus Quartus* and *Christianus Quintus*, which went missing more than 300 years ago. Historical sources record that the ships sank on March 2, 1710, after the crew and enslaved people on board mutinied. Almost 600 Africans from the ships made their way ashore. They are the ancestors of some of the people living there today.

SICILY: Mental gymnastics were emphasized just as much as physical exercise in the ancient Greek colony of Agrigento. The 1st-century B.C. gymnasium at the site contains ample space for workouts, training, and other athletic activities. Recent excavations uncovered a semicircular roofed classroom, the 1st of its kind ever found in a gymnasium complex. Teachers and students would have used this space to hold classes, practice rhetoric, and stage plays as well as intellectual competitions.

TURKEY: The *Iliad* is filled with descriptions of Greeks and Trojans alike drinking wine during the siege of Troy. New research has shown that these scenes may be historically accurate. Analysis of 4,000-year-old fragments of fancy goblets found at the site determined that they had, indeed, once contained wine. The study detected alcohol not just on these drinking vessels, which were used by elites, but also on ordinary cups used by commoners. Perhaps rampant imbibing accounts for why the Trojan War lasted a full decade.



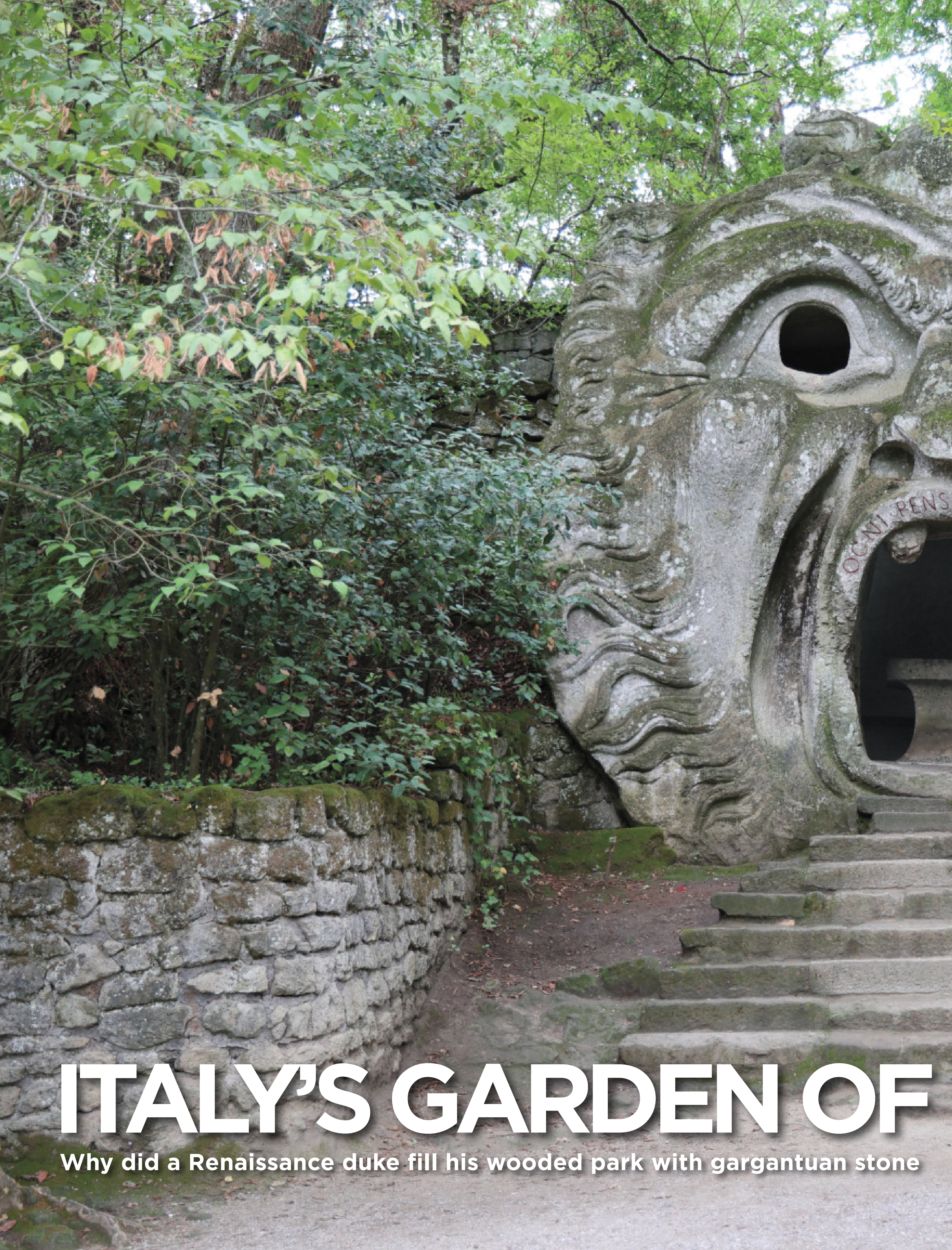
ISRAEL: Authorities revealed a perplexing Roman-era column capital likely dating to between the 2nd and 4th centuries A.D. What makes this Corinthian-style capital exceptional is that it appears to be decorated with a menorah. This imagery has no known parallels from the time. Why a Roman architectural element would contain a depiction of a Jewish symbol has baffled experts, as, by this time, Jerusalem's Jewish population had been expelled. Perhaps, researchers suggest, the sculptor was familiar with images of such candelabras but unaware of their religious connotations.



TAIWAN: According to researchers, a jawbone recovered from the seafloor of the Penghu Channel belongs to a male individual who lived as much as 190,000 years ago. The man was a Denisovan, a member of an extinct human species first identified in 2010. This is only the third location, after Siberia and the Tibetan Plateau, where Denisovan fossils have been found. This suggests that these early humans inhabited broad swaths of Asia encompassing widely varying environments.

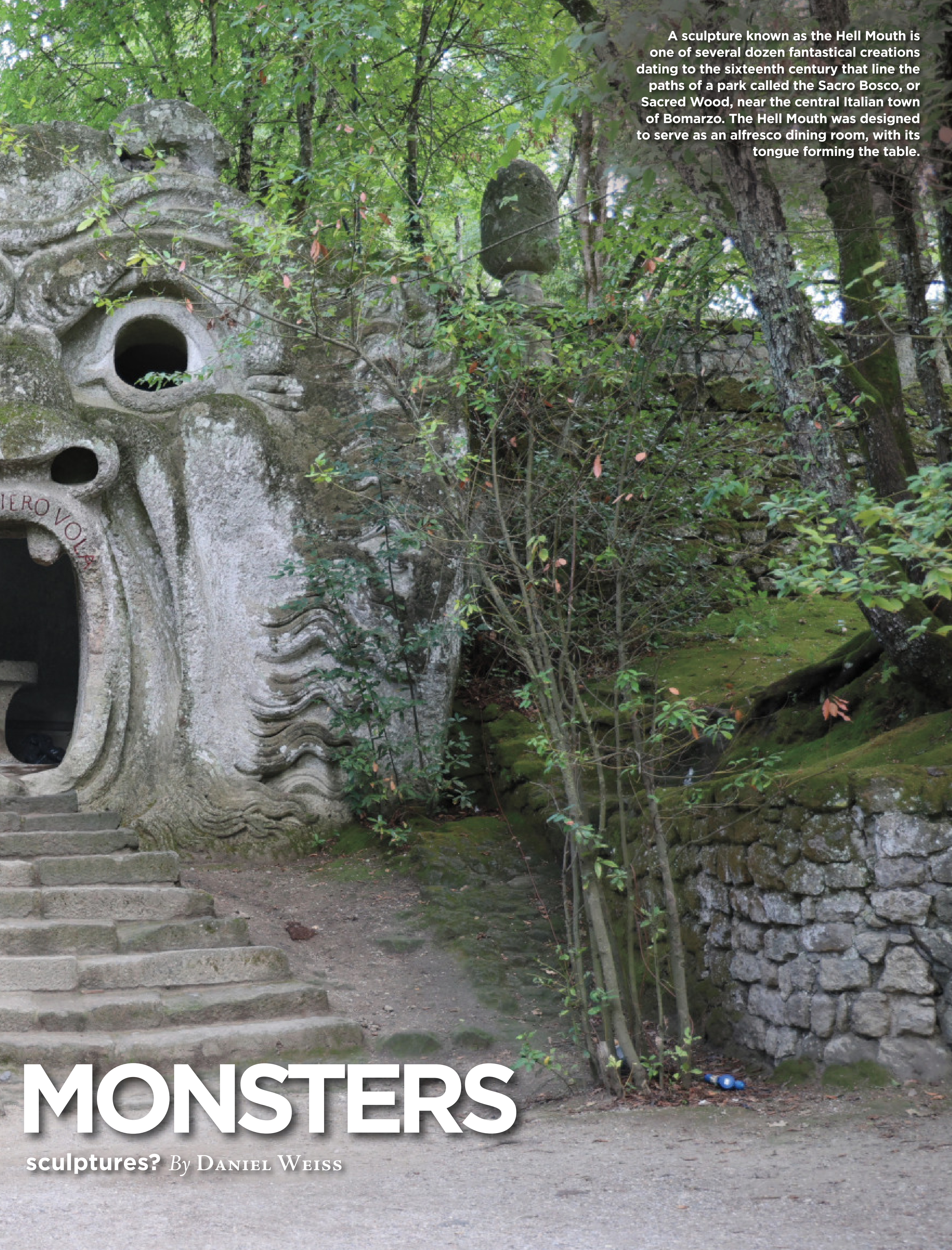
SUDAN: Ancient Egyptians built hundreds of pyramids over the millennia. These monumental structures were exclusively reserved for royal burials—or so scholars have long believed. Recent excavations in the pyramids at the site of Tombos, an Egyptian colony in ancient Nubia, revealed several skeletons interred between 1400 and 650 B.C. The remains of some individuals showed signs of wear and tear likely caused by a lifetime of manual labor. This is hardly a sign of noble birth, suggesting that the Tombos pyramids had a less restrictive entrance policy than previously thought.

CAMBODIA: The torso of a rare type of Buddha statue was unearthed at Ta Prohm, a monastery built by the Khmer king Jayavarman VII in the late 12th to early 13th century. The sculpture stands about 4 feet tall, is heavily adorned with jewelry, and wears a robe and a veil. The Buddha is depicted with his left arm placed across his chest, a previously unknown position in Khmer statuary. Archaeologists were able to reunite the figure with its head, which was found in 1927.



ITALY'S GARDEN OF

Why did a Renaissance duke fill his wooded park with gargantuan stone



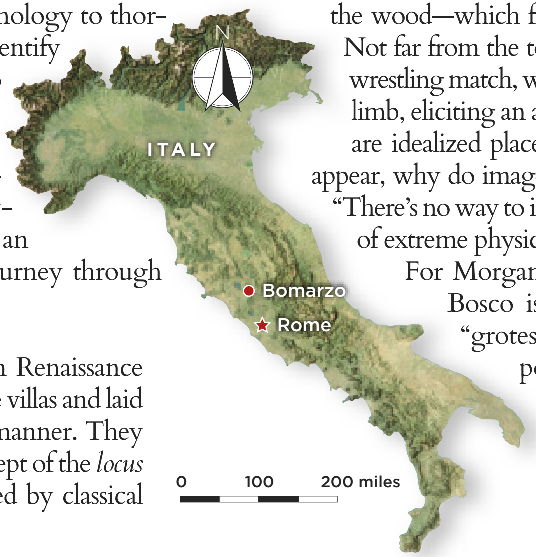
A sculpture known as the Hell Mouth is one of several dozen fantastical creations dating to the sixteenth century that line the paths of a park called the Sacro Bosco, or Sacred Wood, near the central Italian town of Bomarzo. The Hell Mouth was designed to serve as an alfresco dining room, with its tongue forming the table.

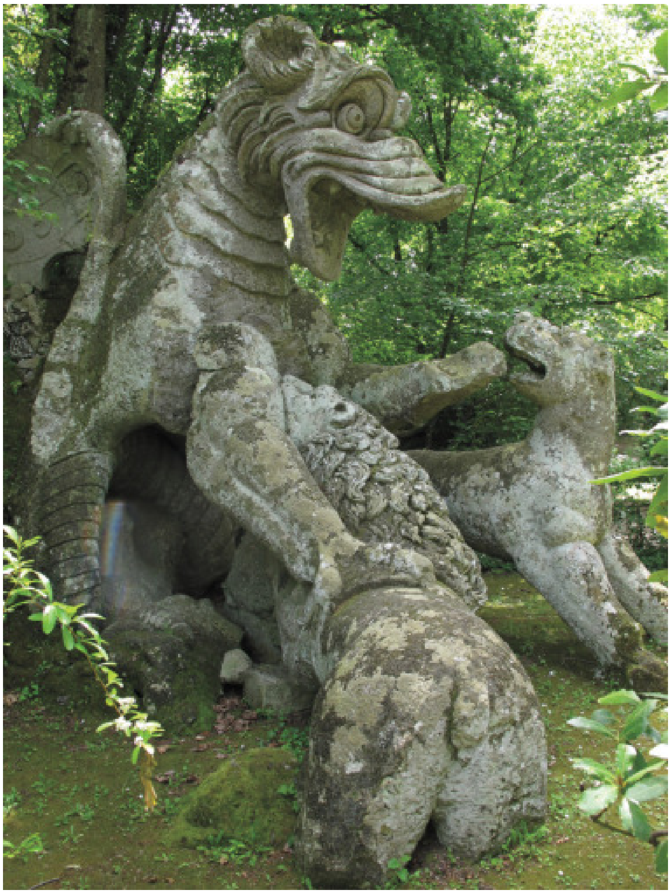
MONSTERS

sculptures? *By* DANIEL WEISS

An enormous bug-eyed dragon fends off an attack by a pair of lions. The toothy maw of a killer whale erupts from the earth across the way from an immense lumbering tortoise that carries a female figure, perhaps the goddess Fame, on its back. A huge siren with two tails sits opposite an equally large winged harpy with a serpent's tail and a lion's claws. These fantastical sculptures are among dozens of such creations lining the paths that wind through a forested ravine below Bomarzo, a medieval town in the Lazio region of Italy. Known as the Sacro Bosco, or the Sacred Wood, this is among the most unusual designed landscapes of the Italian Renaissance. "Upon first visiting the Sacro Bosco, I was completely overwhelmed by the scale of the statuary and how interestingly it was woven into the landscape," says John Garton, an art historian at Clark University. "You would literally come out of vegetation and suddenly there would be this more than two-story-tall monument carved out of native stone. I've since realized it's meant to be jarring. It's intended to be this site of spectacular revelations where monsters come to life and things that have only been known through literature and books jump out at you."

The Sacro Bosco was the brainchild of Pier Francesco Orsini, who inherited the duchy of Bomarzo in 1542 and began work on the sculpture park around a decade later. Orsini and others who visited the grounds in the sixteenth century left only a few written references to the wood. Scholars have proposed a variety of ways to interpret the park, but there is little agreement as to what message—if any—Orsini intended to convey through his creation. "We have so little information about both the design and the experience of the site when it was laid out," says art historian Luke Morgan of Monash University. "There are very few documents from the period. No building records exist, for example." Even the most basic element of this experience—whether guests were meant to follow a particular route when navigating the park's walkways, and what that route might have been—is unknown. In the latest attempt to understand Orsini's vision, Garton, Morgan, and colleagues at the University of Padua and the University of Brescia have launched the Digital Bomarzo Project. They are employing modern imaging technology to thoroughly document the site and better identify what a visitor roaming the Sacro Bosco in the years after it was constructed might have encountered there. In particular, they have made tantalizing new discoveries about how now-defunct fountains would have added an additional sensory dimension to a journey through the unique park.





Two lions attack a giant dragon, one of several scenes in the Sacro Bosco that depict violent encounters.

Typical gardens of the Italian Renaissance were situated directly alongside villas and laid out in an orderly, geometric manner. They are thought to have embodied the concept of the *locus amoenus*, or "pleasant place," referenced by classical authors such as Homer and Virgil and by Renaissance thinkers. "According to the conventional perspective, these were places apart that embodied an idealized notion of nature," says Morgan. "You can read this through the statuary, the architecture, and the experience of the garden." In some cases, *boschetti*, or "small woods," were designed to accompany gardens.

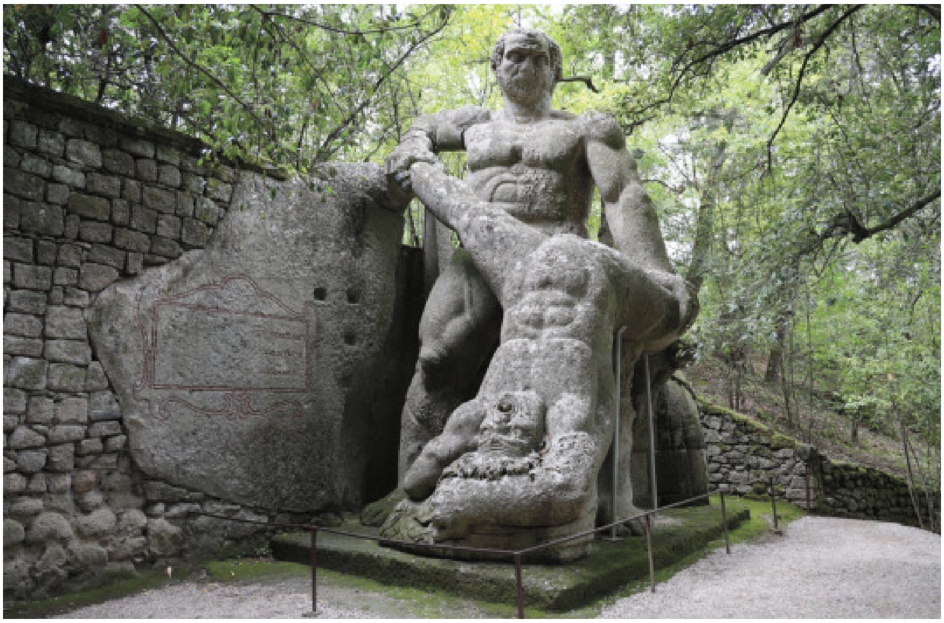
The Sacro Bosco was a different sort of beast. It was nearly a fifth of a mile from the grand residence of the garden's creator, the Palazzo Orsini. A swath of fields separated the palazzo from the wood—which fit nobody's definition of a pleasant place. Not far from the tortoise, a pair of giants engage in a brutal wrestling match, with one calmly ripping the other limb from limb, eliciting an anguished scream. "If Renaissance gardens are idealized places apart, why do these monstrous figures appear, why do images of violence appear?" wonders Morgan. "There's no way to interpret the fighting giants but as an image of extreme physical violence in a designed landscape."

For Morgan, one way of understanding the Sacro Bosco is as a statuary version of *grottesche*, or "grotesque," artistry. This style became wildly popular in Italy after the late fifteenth-century discovery of the Domus Aurea, the ultra-lavish residence of the emperor Nero (reigned A.D. 54–68) in Rome. (See "Golden House of an

This sixteenth-century lead medal depicts Pier Francesco Orsini, the creator of the Sacro Bosco, who inherited the duchy of Bomarzo in 1542.

Emperor,” September/October 2015.) The sprawling estate’s walls were covered with paintings, some featuring bizarre or mythical creatures in strange combinations. These works inspired Renaissance artists, who avidly sought out models from the distant past to fuel their creativity. During the first explorations of the Domus Aurea, the ruins were thought to be *grotte*, or “caves,” which is the source of the name given to this artistic style. “If you go into almost any palazzo or villa, or even church, of that period, you’ll find grottesche imagery—hybrid fanciful figures in which women become fish, men transform into plants, and buildings are supported on slender stalks,” says Morgan. The Sacro Bosco is replete with such depictions, from the massive siren and harpy to the winged horse Pegasus and the three-headed dog Cerberus, who guards the gates to the underworld. It’s little surprise that the Spanish surrealist painter Salvador Dalí, known for his hallucinatory imagery, was enchanted by the site when he visited in 1948.

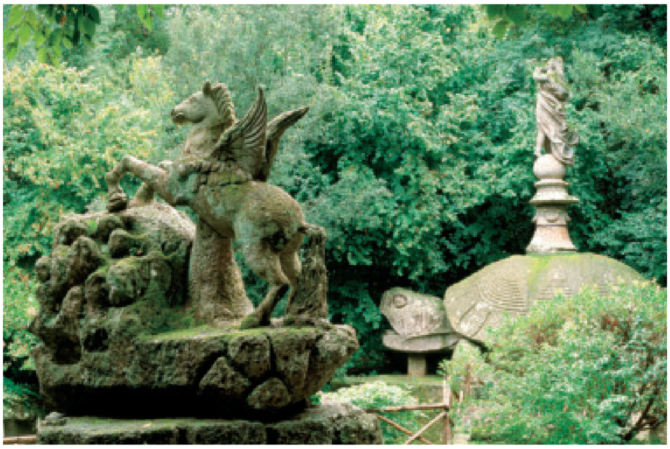
The raw material used to create the Sacro Bosco’s sculptures is another way its design draws inspiration from the past. Many of the park’s enormous works were carved in situ from *peperino*, a type of volcanic rock found there. The apparently haphazard layout of the sculptures was likely dictated by the location of rocks with good sculpting potential, not a preconceived plan. “Orsini seems to have come to the site and seen a very large boulder and decided to create a colossal figurative group out of it,” says Morgan. “Somewhere else, he saw a smaller boulder, so he had his sculptors carve something else out of it.” This practice of sculpting from “living rock” harks back to the Etruscans, who flourished in the area from around 900 to 300 B.C., predating the Romans. The area surrounding the Sacro Bosco is filled with Etruscan ruins, including tombs carved out of the local rock. One of the sculptures in the park is a faux Etruscan tomb facade, intentionally collapsed in a manner intended to mimic these ancient remnants. “The Sacro Bosco is a response to Etruscan antiquity rather than Greco-Roman antiquity, which is much more familiar to us,” says Morgan. “There’s a prestige in Renaissance Italy associated with antiquity in general, and the Sacro Bosco and Orsini can lay claim to a much more ancient tradition than is found in other parts of the peninsula.”



A pair of giants engaged in a vicious wrestling match may have been inspired by *Orlando Furioso*, a 1532 epic poem in which the enraged protagonist tears a woodsman in two.

The colossal size of many of the Sacro Bosco’s sculptures was an additional way in which their creators, like others in the Renaissance, took their cue from the past. Renaissance artists learned, for example, of the Colossus of Rhodes from the first-century A.D. Roman author Pliny the Elder. The Colossus was a 100-foot-tall bronze statue representing the Greek sun god Helios that once stood at the entrance to the port of the Greek island of Rhodes. Indeed, the word “colossal” derives from this and other gargantuan works of art sculpted by the Greeks and Romans. An inscription near the fighting giants in the Sacro Bosco claims a kinship with this famous statue, which was one of the Seven Wonders of the Ancient World. “Just as Rhodes was filled with pride about its Colossus,” the inscription reads, “so my wood is renowned for the same reason; and, unable to do more, I do what I can.”

Orsini was a learned man who possessed a sophisticated knowledge of the literary currents of his time. Thus, scholars have looked to Italian literature for possible sources of inspiration for the Sacro Bosco’s inscrutable sculptures. A 1499 romance called *Hypnerotomachia Poliphili* by Francesco Colonna, in which the main character wanders lost in the woods before emerging into an ancient dreamscape, may have influenced the design of the park as a whole. A likely source for the fighting giants is *Orlando Furioso*, a 1532 epic poem by Ludovico Ariosto, in which the protagonist, driven mad by unrequited love, tears a woodsman in two. “The woods are a kind of fearful place,” says Morgan. “They’re dark and conceal



A sculpture of the winged horse Pegasus was originally a fountain. Nearby, a giant tortoise carries a female figure.

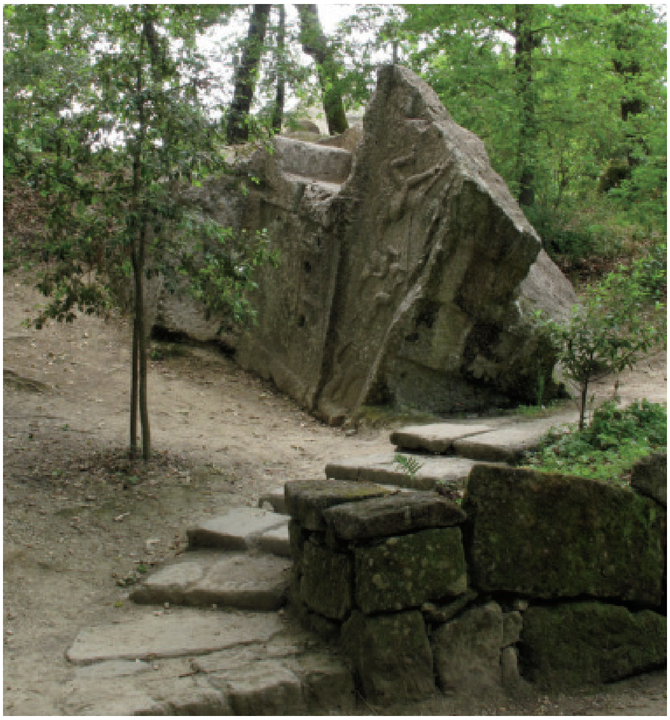
unknown terrors, and all of that is present in the Sacro Bosco."

The park's most explicit, albeit cryptic, literary allusion was embedded in an inscription on its most fearsome sculpture: the Hell Mouth. Today, this roaring mask's upper lip bears the words *Ogni pensiero vola*, or "Every thought flies." However, some of the letters were painted, not carved into the rock, an addition that was likely made in the mid-twentieth century. Peperino is a soft, porous stone that wears away easily. A 1604 drawing by the artist Giovanni Guerra establishes that the inscription was significantly longer at the time and thus must have eroded over the centuries. The drawing shows that the inscription originally read *Lasciate ogni pensiero voi ch'entrate*, or "Abandon all thought, you who enter." This is a play on the phrase above the entrance to Hell in the late medieval Italian poet Dante's *Inferno*: "Abandon all hope, you who enter."

Emblematic of Orsini's eccentric worldview, the Hell Mouth was designed to serve as an alfresco dining room, with its tongue forming the table. Descriptions and drawings from the late sixteenth and early seventeenth centuries show that revelers gathered to feast inside the ghoulish mask while musicians played and torchlight leapt from its mouth and eyes. This incongruous party spot might help explain the inscription's meaning. "Maybe you are being encouraged to enjoy yourself, not to think too hard about the fact that you're entering Hell to have a pleasant meal outdoors in a garden," says Morgan. "One way to understand the phrase is as an exhortation to abandon yourself to physical pleasures."

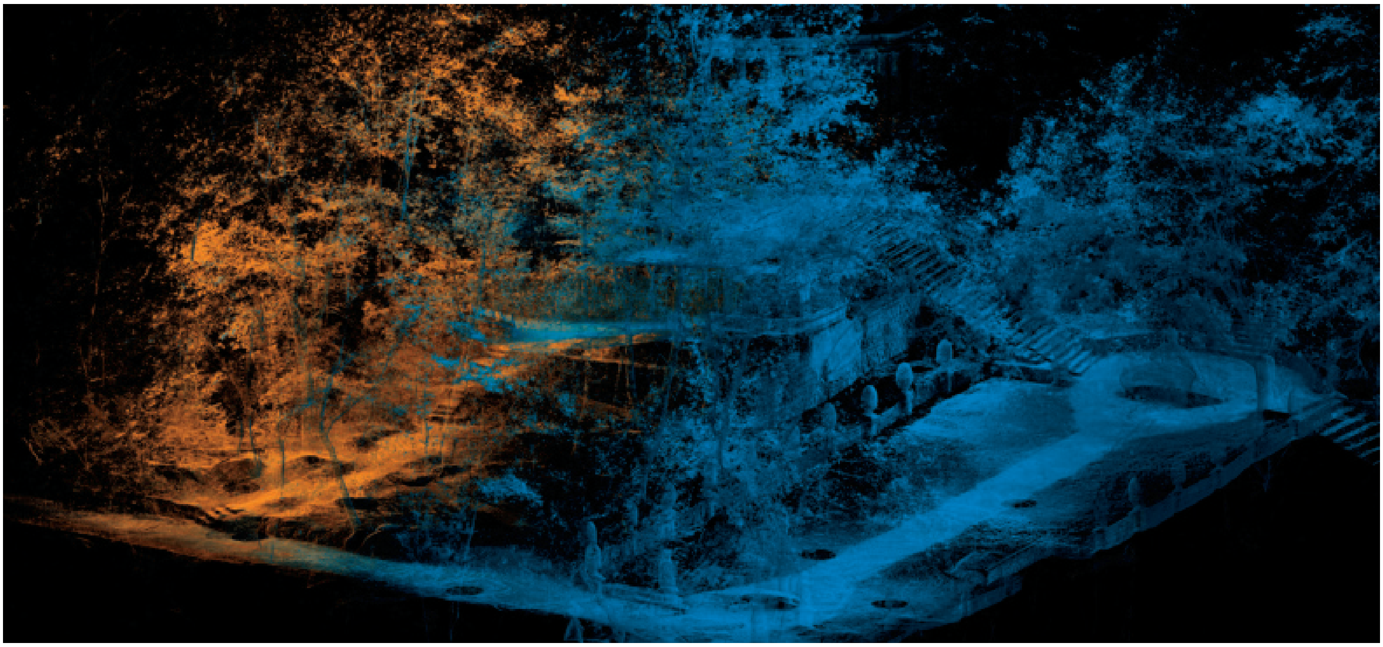
The possibility that the Sacro Bosco can be interpreted as an expression of Orsini's personal philosophy or biography has long tantalized scholars. The duke married Giulia Farnese, a great-niece of Pope Paul III, soon after inheriting Bomarzo in 1542. A *condottiero*, or military leader, Orsini was taken prisoner in the early 1550s while fighting in France. Giulia died in 1560, not long after Orsini was released and returned to Bomarzo. Much of the Sacro Bosco was completed after her death, leading scholars to speculate that the park, several of whose sculptures conjure the underworld, was a reflection of Orsini's grief. A small temple at the wood's highest elevation has a ceiling decorated with roses, which are associated with the Orsinis, and lilies, the heraldic symbol of the Farneses. "This may be a memorial to Orsini's deceased wife," says Morgan. "Once you get to that spot, you emerge into a clearing where there is this classicizing temple, and you feel like you have left the monsters behind."

TO PRESERVE THE FANCIFUL details of the garden's sculptures for scholars and so that people can enjoy the park in the future, the Digital Bomarzo Project is using imaging techniques such as lidar, photogrammetry, and digital scanning of each sculpture to create a 3D model of the entire site. The region is highly prone to earthquakes—in fact, one of the Sacro Bosco's works, a house leaning at a precipitous angle, as if uprooted from its foundations, may be a sly reference to the area's seismic activity. "In the future, there could be an earthquake that would significantly alter what's on the ground," says Garton. "We are keen to make sure our scanning is as precise as we can make it. We will have an archive of all the monuments down to their last centimeter in a way that could allow for reconstruction should they be damaged."



This faux Etruscan tomb facade was designed to appear as if it had collapsed over the centuries, mimicking the many genuine Etruscan ruins found in the area near Bomarzo.

A now-hidden feature of the Sacro Bosco are the fountains included in its original design. By looking underground, the team has learned a significant amount about the role waterworks originally played in the park. Some elements, such as the sculpture of Pegasus, clearly once functioned as fountains. The researchers have used ground-penetrating radar to identify voids that appear to hold water pipes near a number of other sculptures, including a boat-shaped tub adorned with dolphins. "We know from a sixteenth-century source that the Sacro Bosco's waterworks were highly regarded," says Garton. "Yet, when you visit today, you would have no clue that there were

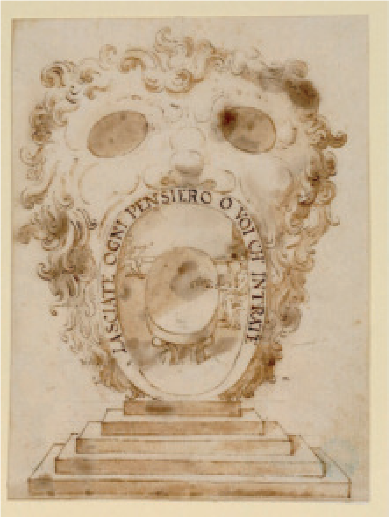


This digital scan of a portion of the Sacro Bosco was produced by a project that aims to preserve the park's details for future study.

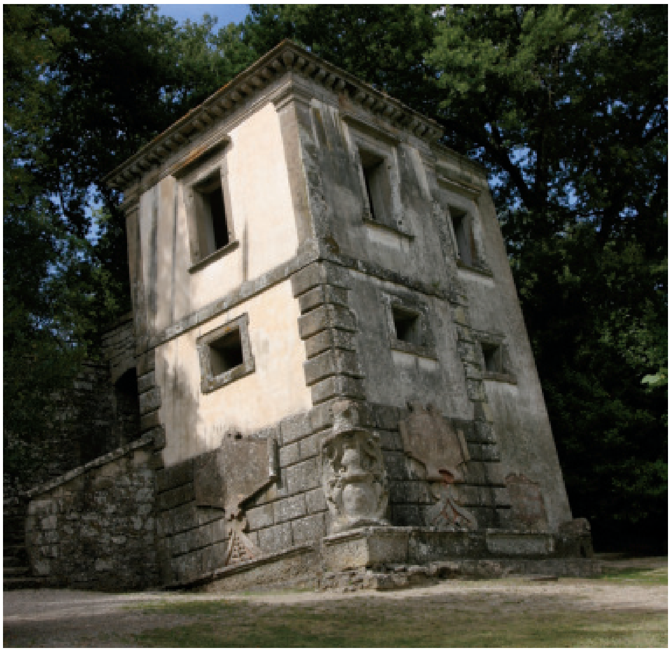
once gurgling fountains that would have produced audible as well as visual splendor."

Among the enduring mysteries of the Sacro Bosco is the identity of the architect and sculptors Orsini employed to execute his vision—information he neglected to include in the few surviving documents relating to the site. "One of the maddening things about working on the Sacro Bosco is how little historic written evidence there is," says Garton. "We have to re-create quite a bit from a close look at what is on the ground. That's all there is to go by." The researchers hope to identify Orsini's artistic partners by comparing their digital scans of the park's features with those of other Renaissance sculptures and structures.

One question researchers do not anticipate being able to answer is what itinerary early visitors would have taken through the Sacro Bosco. There are multiple ways to explore the wood, and there may once have been multiple entrances. "The experience is a disorientating one, and it seems to me that there was no predetermined route," says Morgan. "Strange figures loom out of the undergrowth and the darkness. You feel lost in the dark wood like Dante in the *Divine Comedy*. But then you make your way and make your own choices about the route that you take through it." Just as there is no single pathway through the wood, there is no single way of interpreting it, no single text that can unlock its secrets. "The experience of the Sacro Bosco is more like flipping between the pages of a whole range of texts that don't necessarily cohere into a single linear narrative," says Morgan. "This is all part of why it has fascinated people for so long." ■


LASCIATE OGNI PENSIERO O VOI CH' INTRATE

A 1604 illustration of the Hell Mouth shows that its inscription once read *Lasciate ogni pensiero voi ch'entrate*, or "Abandon all thought, you who enter."



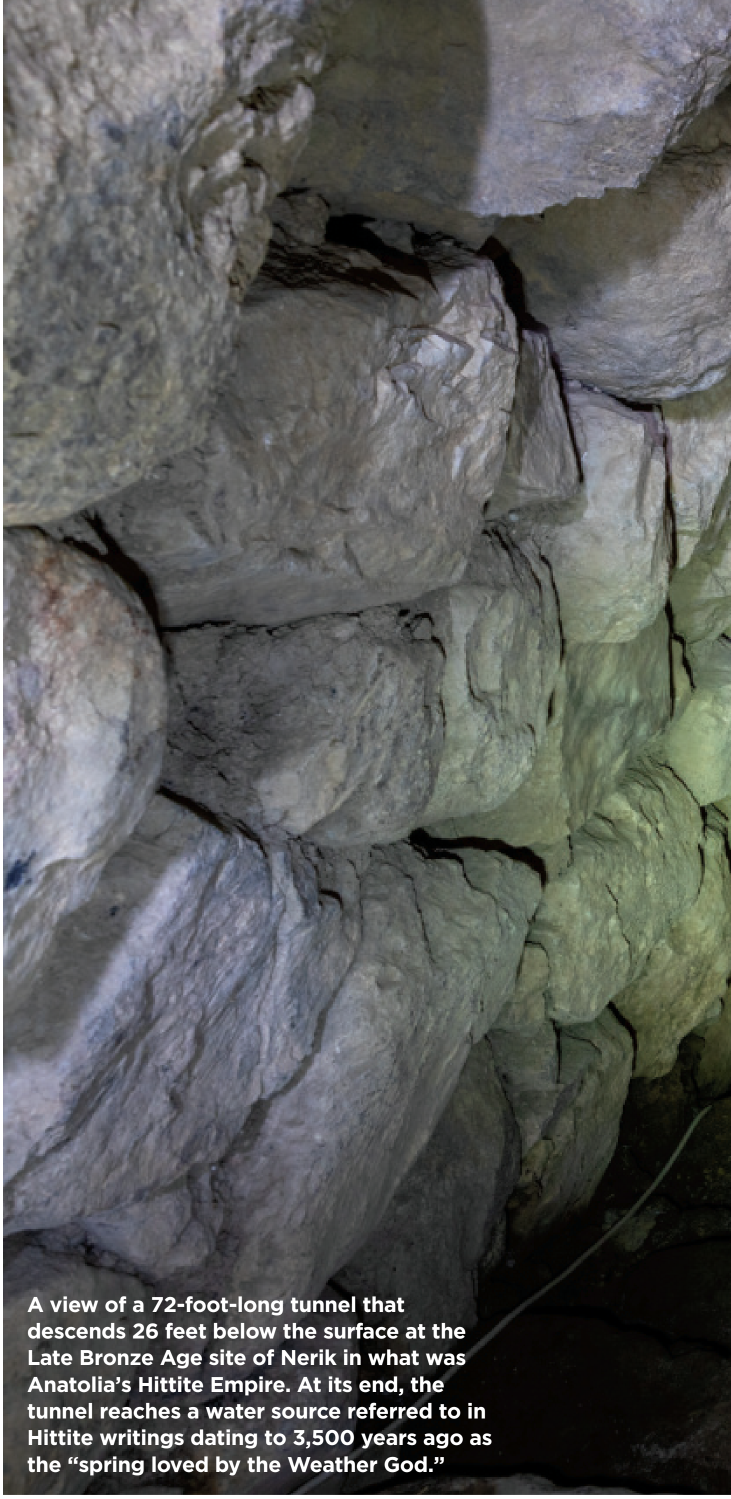
A house leaning as if uprooted from its foundations may be a reference to seismic activity in the Bomarzo area, which is highly susceptible to earthquakes.

Daniel Weiss *is executive editor at* ARCHAEOLOGY. *To see more images of the Sacro Bosco, go to archaeology.org/bomarzo.*

THE HOME OF THE WEATHER GOD

In northern Anatolia, archaeologists have discovered the source of Hittite royal power

By Tolga İldun



A view of a 72-foot-long tunnel that descends 26 feet below the surface at the Late Bronze Age site of Nerik in what was Anatolia's Hittite Empire. At its end, the tunnel reaches a water source referred to in Hittite writings dating to 3,500 years ago as the "spring loved by the Weather God."

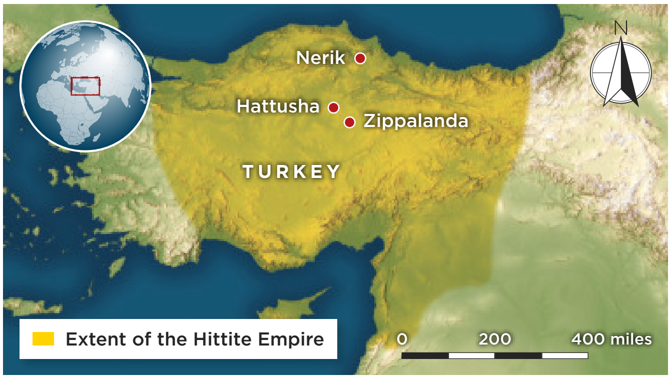
Descending dozens of slick steps worn smooth by millennia of use, guided only by stone walls, one can almost hear echoes of prayers to long-lost gods hovering in the cool, damp air of a narrow underground tunnel. At the bottom of the 50-step staircase lies a water-filled pool where, thousands of years ago, Hittite kings came to pray for prosperity. For these mighty rulers of ancient Anatolia, this sanctuary dedicated to their all-powerful Weather God was the most revered place in their vast empire.

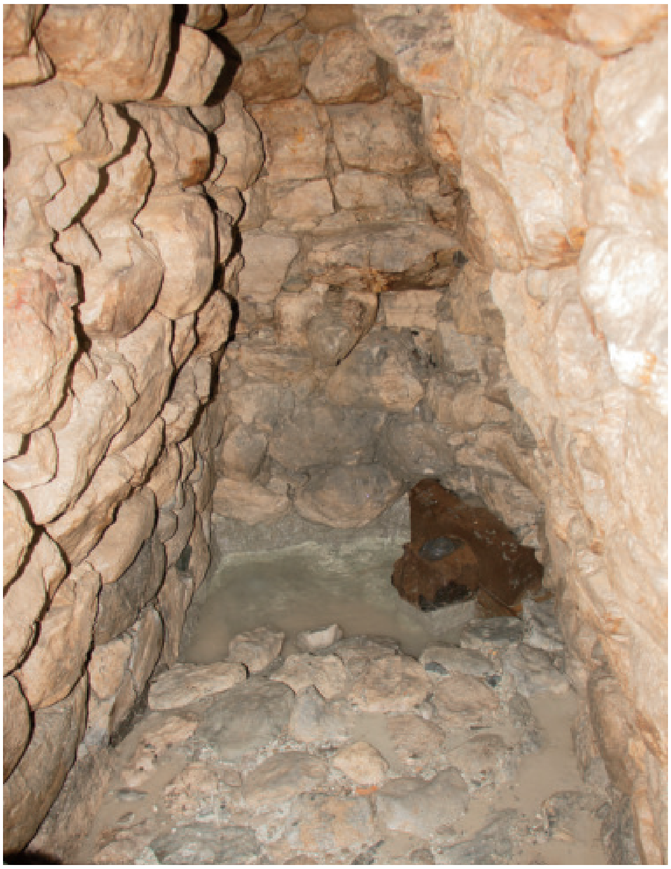
In about 1650 B.C., the Hittites began to expand their dominion, which eventually spanned Anatolia from the Black Sea coast in the north to northern Syria in the south, and nearly from the Aegean in the west to beyond the Euphrates River in the east. Each year, during grand festivals central to the Hittite calendar, the king, accompanied by priests and officials, traveled throughout the empire, holding ceremonies in various cities and temples. These annual journeys culminated in Nerik, site of a sacred spring dedicated to the Weather God.

Before the Hittites, the Hattians, an ethnic group indigenous to central Anatolia, inhabited much of the land that would become the Hittite Empire. The Hattians were organized into city-states, one of which was centered at Hattus, which later became the Hittite capital of Hattusha. Around 2000 B.C., the ancestors of the Hittites migrated to this area and established their own civilization, absorbing the native Hattian population. The Hittites also adopted facets of Hattian culture and their distinctive language for some religious and official texts, as well as some personal and place names. The Hittites called their new territory the land of Hatti.

At their empire's height, during the fourteenth and thirteenth centuries B.C., the Hittites were rivals of Egypt, Babylon, and Assyria in a relentless competition for territory that consumed the Near East. Around 1180 B.C., amid widespread upheavals in the region and beyond, the last Hittite ruler, Suppiluliuma II (reigned ca. 1207–1178 B.C.), succumbed to the effects of economic crises, internal turmoil, and drought, as well attacks by the Sea Peoples from the Aegean. (See "The Philistine Age," July/August 2022.) Hattusha was destroyed, and although small Hittite kingdoms continued to exist for a short time in southeastern Anatolia and northern Syria, their once-great empire faded into the past, and their robust record of military treaties, legal codes, myths, and rituals inscribed on clay tablets fell silent. And, while people continued to live at Nerik, the Hittite ruling class abandoned the place that had once been so essential to them.

Of the 30,000 fragments of Hittite tablets found in Hattusha since the end of the nineteenth century, only about 100 mention Nerik. Some texts describe the site as being the home of the "spring loved by the Weather God," and others confirm its role as a sacred water source, but none mention its location. Despite decades of searching for the site, it was only 20 years ago that archaeologists identified Oymaağaç Höyük, a large mound about 110 miles north of Hattusha, as Nerik. Pinpointing the location of the sacred spring motivated scholars to explore what Nerik may have looked like and the nature of the rituals that may have been performed there. It also led them to investigate why the site was once so vital to the Hit-





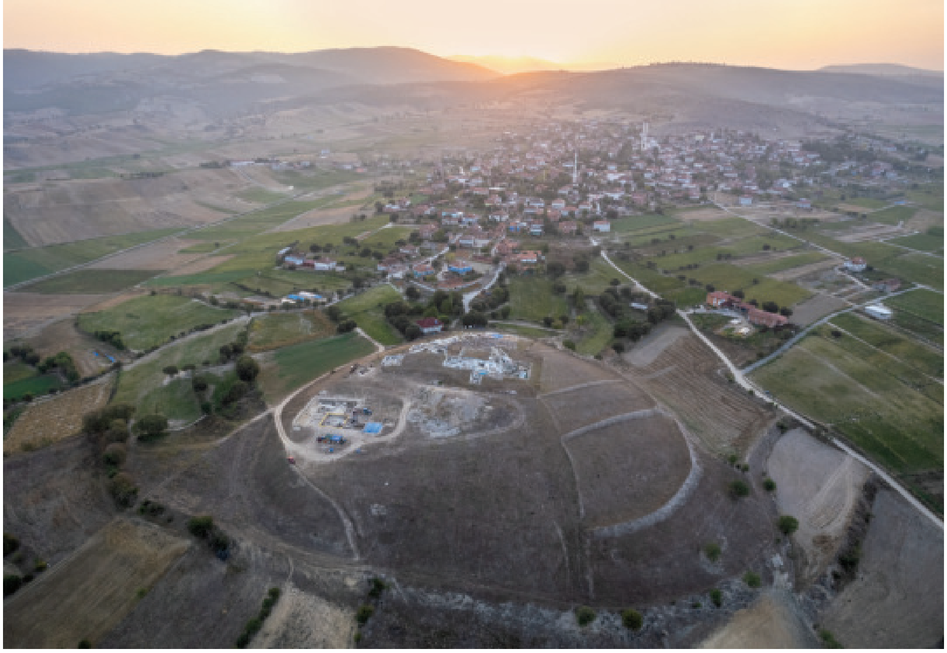
This still-functioning Hittite-period drain made from oak logs reinforced with lead was discovered at the end of the tunnel.

tite kings' vision of themselves. In his autobiography, known as the *Apology*, Hattushili III (reigned ca. 1267–1237 B.C.), one of the Hittites' greatest rulers, advertises his special bond with the Weather God, a relationship he exploits to strengthen his right to rule at a time when the Hittite royal succession was in question. Nerik was the home of the Weather God, the place to which Hattushili III looked for strength, even as the sanctuary faced repeated dire threats from marauders from the north determined to control this sacred site.

THE FIRST ARCHAEOLOGICAL investigation of Oymaağaç Höyük was a survey conducted in 1972 by archaeologist Bahadır Alkım of Istanbul University. Alkım and his team recovered pottery fragments on the surface and identified a triangular structure on the mound that he believed resembled the similarly shaped entrance to a tunnel previously discovered at Hattusha. More than 30 years later, an interdisciplinary team led by archaeologists Jörg Klinger of the Free University of Berlin and Rainer Maria Czichon of Uşak University returned to the site. From the start, they wanted to answer a burning question: "Could the mound be Nerik?"

During an initial three-week survey, the team discovered several cuneiform tablets, the first to have been found at the site. The following year, geophysical surveys of the mound's highest point revealed evidence of a building measuring approximately 1,700 square feet. The team dated the earliest iteration of this structure, which they identified as a temple, to the Late Bronze Age (ca. 1600–1180 B.C.) based on the style of pottery they unearthed, radiocarbon dates they obtained from burned wood found in its walls, and distinctive architectural features including small projections and niches on one of its facades. They dated its most recent level to the reign of Suppiluliuma II. At other Hittite sites, archaeologists had identified temples dedicated to the Weather God at the apex of mounds, and the team believed that the temple at Oymaağaç Höyük was also devoted to this potent deity.

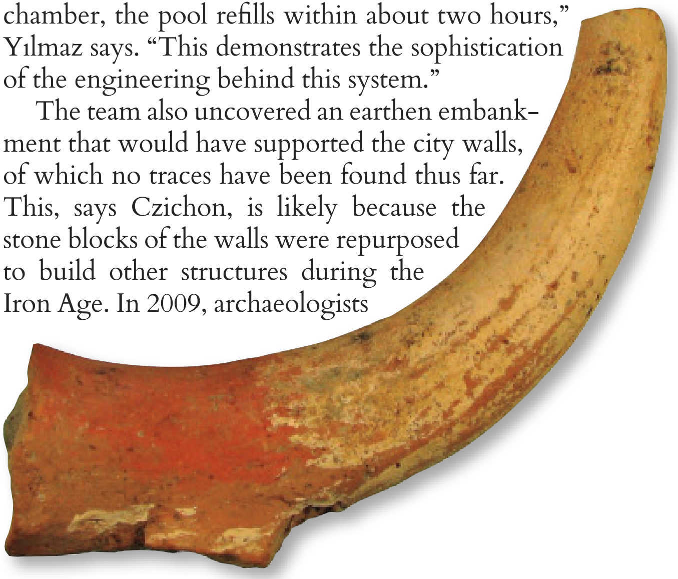
During excavations, the team revealed a tunnel east of the temple, near where Alkım had found the triangular tunnel entrance. "This tunnel is unlike the escape passages or gateways beneath fortifications commonly seen in Hattusha," says archaeologist Mehmet Ali Yılmaz of Samsun Ondokuz Mayıs University, deputy director of the excavations. "It's a stepped tunnel leading to a water source." The 72-foot-long vaulted tunnel descends 26 feet below the surface. At its end, archaeologists discovered a chamber with a V-shaped opening in the rear wall through which water flowed into the pool. On the floor, they found 2,000 waterlogged pieces of wood that were dated to the Iron Age, around 900 B.C. In an older phase of the chamber, the team discovered a drainage system made of oak timbers reinforced with lead. Research-



A large mound measuring 650 feet across called Oymaağaç Höyük was definitively identified as the site of Nerik after decades of survey and excavations.

ers used dendrochronology to date this drain to the Hittite period. They also found hazelnut shells and other botanical remains that they radiocarbon dated to the same era. Remarkably, the drainage system keeps the level of the spring-fed pool at the bottom of the tunnel constant more than 3,000 years after its construction. "Even when we drain the area using a submersible pump to investigate and photograph the chamber, the pool refills within about two hours," Yılmaz says. "This demonstrates the sophistication of the engineering behind this system."

The team also uncovered an earthen embankment that would have supported the city walls, of which no traces have been found thus far. This, says Czichon, is likely because the stone blocks of the walls were repurposed to build other structures during the Iron Age. In 2009, archaeologists made an intriguing find in one of the city's gates, which had originally been flanked by two towers with six rooms each. In the northern tower, they found a room filled with a rich collection of artifacts, including plates, gray and red pitchers, a red-glazed bottle, a single-handled cup, bone spindle whorls, a bronze sickle, a pin, a bronze ring decorated with a rosette, and a gold- or silver-plated ring. The archaeologists also unearthed a bathtub with a small bench inside sunk into the floor of one of the rooms, which may have been used for ritual bathing. Although scholars debate the precise purpose of these objects, Czichon believes this room, which overlooked the temple, likely served a ceremonial purpose, and perhaps was used for a purification ritual. "It seems plausible that important individuals, possibly members of the royal family, prepared themselves here before visiting the Weather God's temple," Czichon says.



A terracotta horn from a figurine of one of the Weather God's sacred bulls was found near the god's temple in Nerik.

Over the next decade, in addition to tablets mentioning the sanctuary of Nerik, the Weather God and his consort, Zahapuna, and nearby landmarks such as Mount Haharwa, the team found other crucial evidence confirming that Oymaağaç Höyük was, indeed, Nerik. These include fragments of terracotta figurines depicting Hurri and Sherri, the sacred bulls of the Weather God's temple, and a tablet including the term *dahanga*, perhaps referring to the holiest space in his temples. And there was, of course, the spring itself. "When our excavations began in 2007, while Hittite mythology mentions the region, the existence of a spring here was uncertain," says Yılmaz. "But the identification of the spring strengthened our identification of Oymaağaç Höyük as Nerik."

From a tablet found in Hattusha:

And to the Weather God of Nerik…will cry out a pleasant message, like a bird.
And thus will awaken the Weather God of Nerik from pleasing dreams!
He will come, the Weather God of Nerik, from heaven and earth!
Come, Weather God of Nerik, from sunrise and sunset!
Come, Weather God of Nerik, from the sky!
If you are with your father, the Weather God,
or if you are in the dark lands, with your mother, Ereshkigal.
Come to your festival in the morning!
…From Nerik's spring, from your beloved place, come!

To date, the team working at Nerik has unearthed 26 fragments of cuneiform tablets, the smallest of which measures just over half an inch and the largest just over six inches. "It's like finding small pieces from the inner pages of a newspaper published fifty years ago," Czichon says. "How much of the content could you truly understand? And in this case, we're dealing with fragments that are 3,500 years old." The texts are of different types, including cult object inventories, letters, and annual records dating to the height of the Hittite Empire. "We can confidently state that all the texts from Nerik date to the thirteenth century B.C.," says Klinger. The style of Hittite texts tends to be formulaic, so it isn't possible to tell exactly where a text was written, whether in Hattusha or in another city. "Presumably, as with other sites where there are Hittite texts, one can expect that both were the case," says Klinger. "Some texts were written on-site, while some may have been brought there. While the texts we found could theoretically have been written in Hattusha, I believe based on the style that most of them were composed locally." The fragments offer glimpses into rituals, such as offerings of grapes and animals to the Weather God, as well as inventories

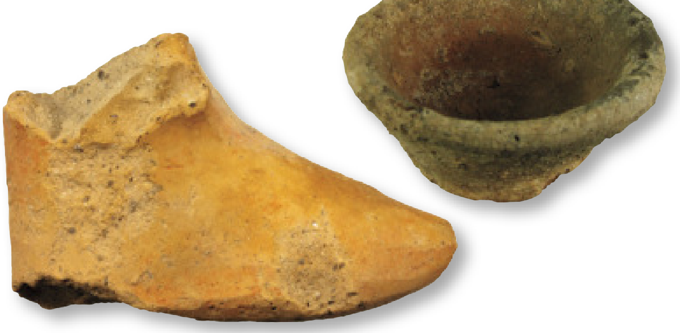
A pottery pitcher, a bronze ring, and a ceramic jar were all found in one of the rooms inside Nerik's northern tower.

Uşaklı Höyük, the possible site of Zippalanda

SECOND CITY

For the past four years, a team led by archaeologist Anacleto D’Agostino of the University of Pisa has conducted ongoing excavations at Uşaklı Höyük, a mound located in the heart of the Central Anatolian Plateau. There they have found large public buildings—possibly temples and a palace—leading them to believe that the mound may be the site of Zippalanda, a sacred city that, like Nerik some 100 miles away, was dedicated to the Weather God. In 2021, the team unearthed a circular structure that contained large quantities of animal bones and potsherds that was likely a place for rituals and perhaps where offerings were made to a deity. They have also found fragments of clay tablets that contain mythological, ritual, and incantatory texts. The most recently discovered inscription, unearthed in 2024, refers to a city associated with Zippalanda.

Zippalanda is frequently mentioned in Hittite texts that describe festivals attended by the king. For example, a spring festival called the AN.TAH.SUM, which lasted between 30 and 45 days, is known to have been celebrated there. One text records that the king’s journey from the Hittite capital of Hattusha required two days, about the time it would take to travel from the capital to the current excavation site. It also references a mountain called Mount Daha where the king would perform a ritual before proceeding to Ankuwa, a city known to have been between the capital and Zippalanda. The imposing silhouette of Mount Kerkenes, which is visible on the southern horizon from Uşaklı Höyük, may correspond with the location of Mount Daha as described in written sources. The mound is also the only site in the immediate region where archaeologists have discovered significant finds from the Hittite period. Nevertheless, definitive proof that Uşaklı Höyük is Zippalanda—as almost all Hittite scholars believe—is still being sought. “All these findings suggest that the site may have housed a significant Hittite archive,” D’Agostino says, “but conclusive evidence, namely a tablet from Uşaklı Höyük explicitly mentioning Zippalanda, is still missing.”—*T.İ.*

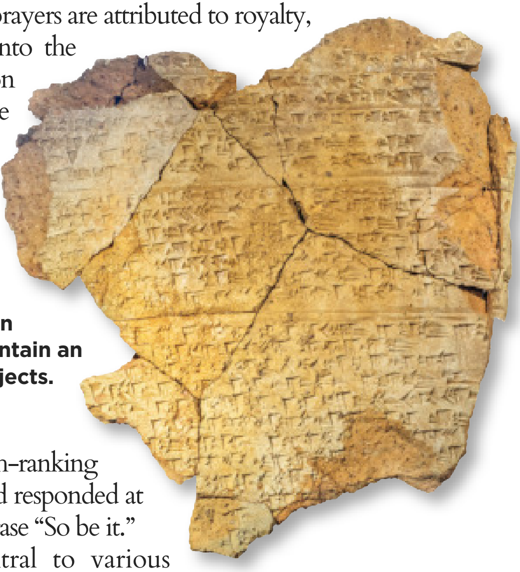


A miniature pottery vessel (top) found in Nerik was used to hold offerings to the gods. A terracotta foot (above) found near the Weather God’s temple in Nerik was originally covered in red paint and probably belonged to a statuette of a god.

of pottery. One includes a scribe’s apology for failing to weigh an item while documenting temple possessions. Another contains a prayer to anoint the Hittite king Tudhaliya IV (reigned 1237–1209 B.C.) as a priest of the Weather God.

Hittite religion integrated deities into a vast pantheon that was partly drawn from other peoples. Rituals such as the Nerik Expiation Ritual, the Restoration of Nerik, and the Purification Ritual of Nerik, known from tablets found in Hattusha, were deeply ingrained in Hattian culture and absorbed by the Hittites. Hittite deities, whether native or borrowed, were depicted as dependent on humans, providing aid in exchange for the performance of rituals and donation of offerings. Like their devotees, Hittite gods ate, drank, loved, and hated. When neglected, they could be vengeful.

It appears that Hittite religion was largely reserved for elite members of society, and especially for the royal family. All extant examples of Hittite prayers are attributed to royalty, giving no insight into the practices of common people. Temples were exclusive spaces where rituals were conducted before cult statues while high-ranking guests looked on and responded at the end with the phrase “So be it.”



This clay tablet found during recent excavations in Nerik appears to contain an inventory of cult objects.

Nerik was central to various cultural and religious practices, and anyone aspiring to be king required the Weather God’s approval. The Purulliya Festival, which had Hattian origins, was held at the start of the new year and was an occasion to renew the ruler’s powers. Scholars believe that during this festival, statues of the Weather God and Zahapuna were placed within his temples' dahanga.

Nearly all the prayers on the tablets discovered thus far were inscribed as a response to a pressing need that demanded supplication to the gods: Either a disease had struck the land, a deity had disappeared, or enemy armies were ravaging the empire.

From a tablet found in Hattusha:

From the land of Nerik, from the city of Hurshama…
the Kashka people have destroyed your temples in these lands.
They broke the statues of your gods.
And, since we respect the gods, we pay attention to their corresponding festivals.
However, since the Kashka people have taken control of Nerik, we will send the sacrifices of Nerik's Weather God and the gods of Nerik from Hattusha to the city of Hakmish.

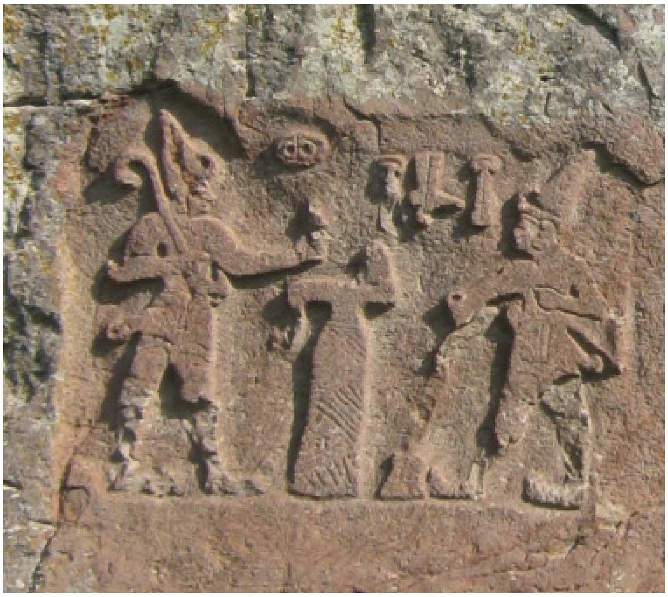
Between the reigns of the king Hantili II and Hattushili III, even as the Hittites' power grew, a people known as the Kashka threatened their domain. What little scholars know about the Kashka, who lived in mountainous regions bordering the Black Sea, is based solely on Hittite sources, which describe them as raiders who were illiterate, resisted central authority, and built no cities. "The Hittites convey negative information about the Kashka, whom they viewed as enemies," Czichon says. "From the Hattusha tablets, we learn that after Hantili I's reign, from 1590 to 1560 B.C., the Kashka threat grew." While Muwatalli II (reigned ca. 1295–1272 B.C.) was king, Kashka raids forced the Hittites to move the capital from Hattusha to the city of Tarhuntasha, but this only weakened Hittite control in the north, where the Kashka remained a persistent threat. (See "The Storm God's City," May/June 2024.) At some point, Hittite tablets record, the Kashka even took control of Nerik, but Czichon explains that the lack of archaeological evidence associated with the Kashka makes it difficult to establish exactly when this occurred. When Nerik came under Kashka control, the Hittites moved their religious rituals to the city of Hakmish, which scholars believe was likely located southeast of Nerik, although the site has yet to be identified.

From a tablet found in Hattusha:

The land of Nerik,
in the time of the earlier kings,
suddenly collapsed, and its roads
were overgrown with brush.
And the city of Nerik was
like a stone fragment
immersed in deep waters.

When Hattushili III ascended the throne, he finally brought to fruition the fight to recapture Nerik that had begun nearly a century before. In his *Apology*, Hattushili III recounts having been born a sickly child, surviving only through the protection of the goddess Ishtar. Throughout his narrative, the gods, especially the Weather God, are not just divine overseers but actively shape his destiny. Hattushili III reaffirmed his strong bond with the Weather God by retaking Nerik.

Hattushili III's 30-year reign alongside his queen, Puduhepa, the daughter of a priest from the city of Lawazantiya in the land of Kizzuwatna, was marked by the peace and prosperity Hittite kings sought at Nerik's sacred spring. During this time, the Hittites' relationship with the Egyptians greatly improved, culminating in the signing of a treaty with the pharaoh Ramesses II (reigned ca. 1279–1213 B.C.), who married Hattushili III's daughter. Nerik remained a major center for religious ceremonies throughout the rest of the thirteenth century B.C. Although whether it was considered sacred after the fall of the Hittite Empire is uncertain, the spring at Nerik still flows today. The Weather God, too, endured in later cultures across Anatolia, appearing as Zeus Sabazios among the Phrygians, Tarhunt among the Luwians, and Teisheba among the Urartians. The identification of Oymaağaç Höyük as Nerik represents a significant archaeological achievement, but beyond that, it signifies the recovery of a site that was once the spiritual and ceremonial heart of the Hittite Empire. Nerik was where kings encountered the divine and where their right to rule was sanctified by its sacred waters.



A section of a thirteenth-century B.C. wall relief found near the central Anatolian city of Kayseri depicts (left to right) the Weather God, the Hittite king Hattushili III's queen Puduhepa, and Hattushili III offering libations to the god.

From a tablet found in Hattusha:

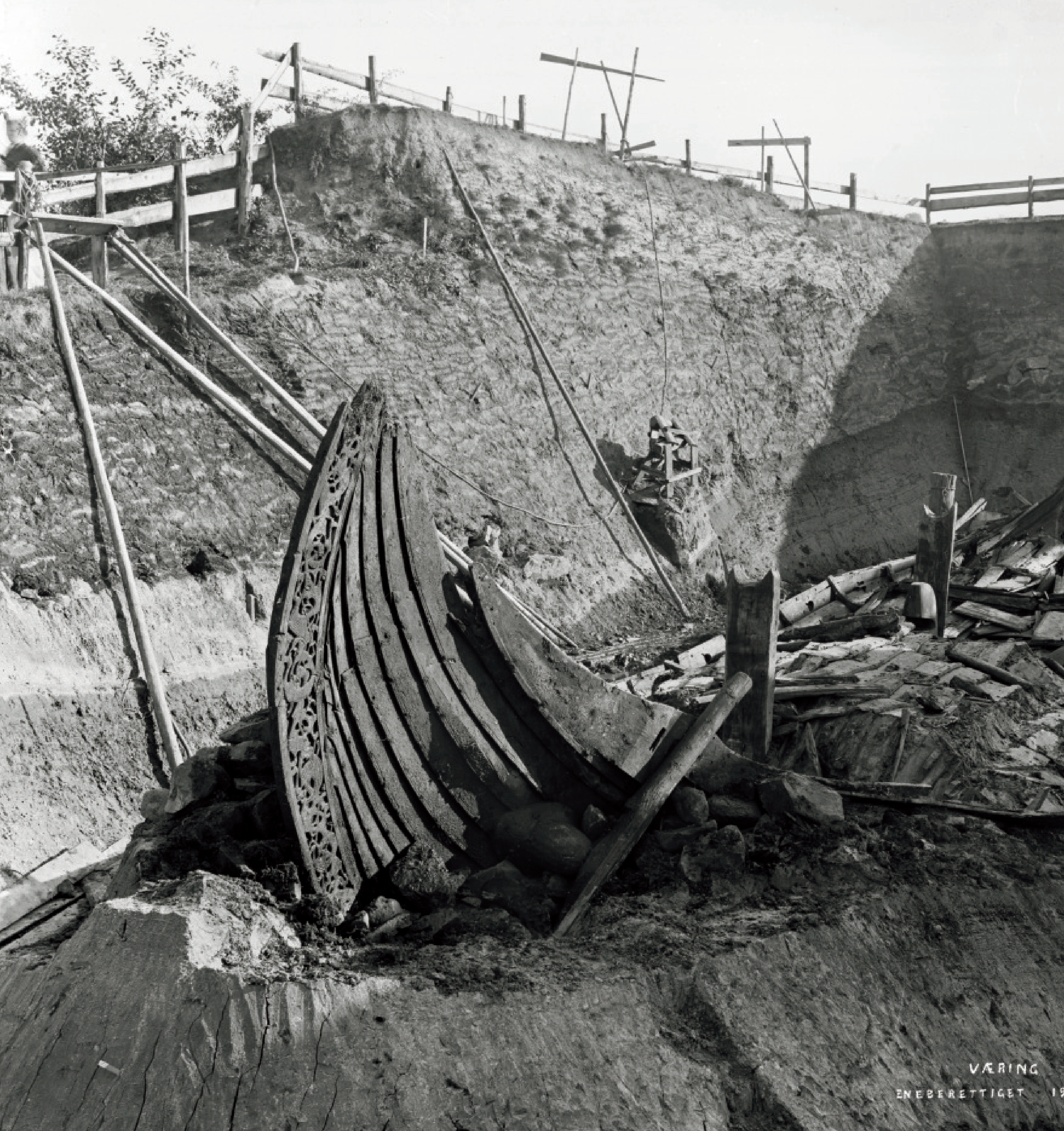
The Marashshanta River once flowed in the direction.
But the Weather God turned it
and directed it toward the Sun God of the Gods,
and made it flow near Nerik. ■

Tolga İldun *is a photojournalist living in Istanbul. The texts of Hittite tablets can be found at hethport.uni-wuerzburg.de.*

Setting Sail for Valhalla

Vikings staged elaborate spectacles to usher their rulers into the afterlife

By Andrew Curry


VÆRING
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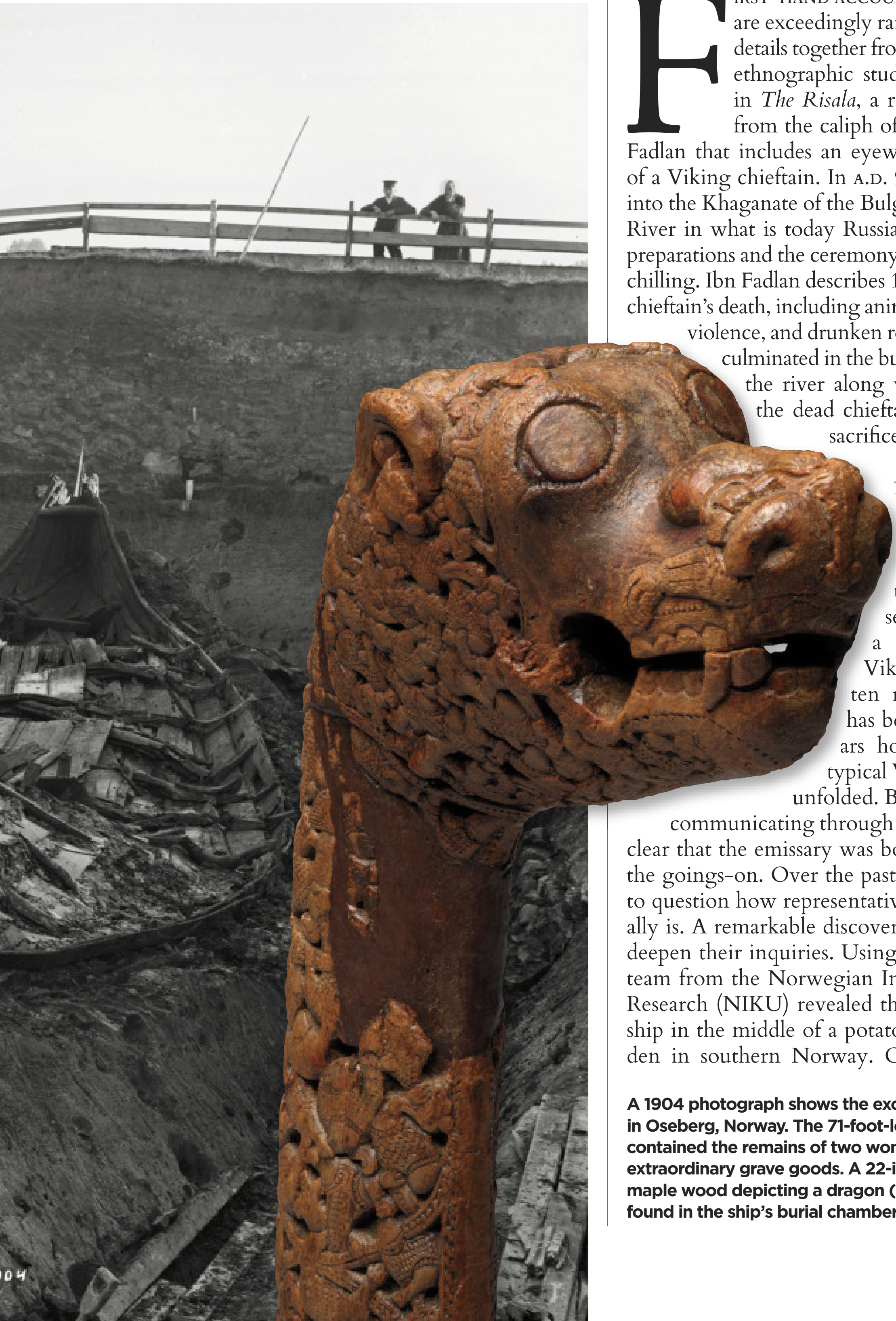
> *And so it proved, for within that time the ship and the pyre, the girl, and the corpse had all become ashes and then dust. On the spot where the ship stood after having been hauled ashore, they built something like a round mound. In the middle of it they raised a large post of birch-wood on which they wrote the names of the dead man and of the king of the Rus, and then the crowd dispersed.*
>
> The Risala, *Ahmad Ibn Fadlan*

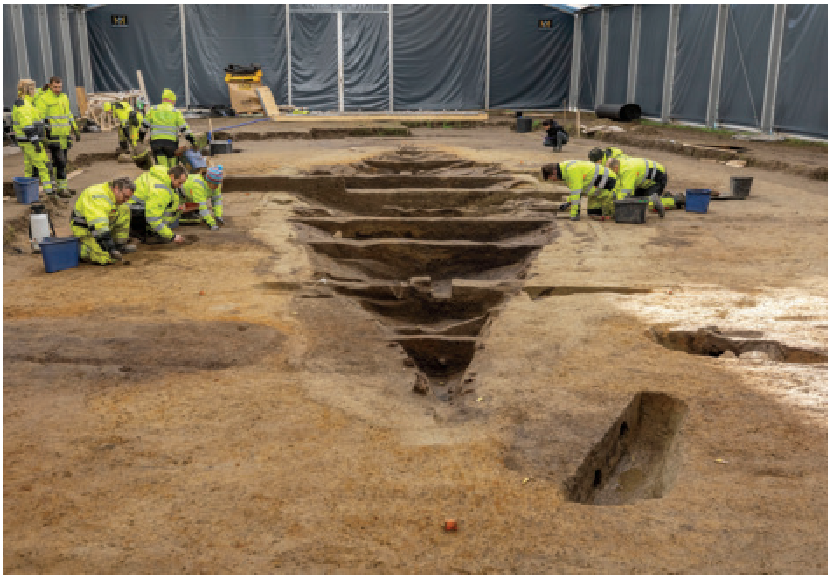
First-hand accounts of ancient funerary rituals are exceedingly rare, leaving researchers to piece details together from archaeological evidence and ethnographic studies. One exception is found in *The Risala*, a report written by an emissary from the caliph of Baghdad named Ahmad Ibn Fadlan that includes an eyewitness account of the funeral of a Viking chieftain. In A.D. 921, Ibn Fadlan traveled deep into the Khaganate of the Bulgars on the banks of the Volga River in what is today Russia. His detailed account of the preparations and the ceremony he saw there is both vivid and chilling. Ibn Fadlan describes 10 days of rituals following the chieftain's death, including animal and human sacrifice, sexual violence, and drunken revelry. These rituals, he writes, culminated in the burning of a ship hauled up from the river along with its honored passenger—the dead chieftain—and an enslaved woman sacrificed during the ceremony.

In the late 1800s and early 1900s, multiple such funeral ships were found in Scandinavia, where the Vikings originated. These ships were typically oceangoing vessels that were repurposed for a final voyage. Because the Vikings themselves left few written records, Ibn Fadlan's report has been the key source for scholars hoping to understand how a typical Viking ship burial would have unfolded. But Ibn Fadlan was an outsider communicating through a translator. *The Risala* makes clear that the emissary was both confused and appalled by the goings-on. Over the past decade, scholars have begun to question how representative of reality his account actually is. A remarkable discovery in 2018 prompted them to deepen their inquiries. Using ground-penetrating radar, a team from the Norwegian Institute for Cultural Heritage Research (NIKU) revealed the outline of a buried Viking ship in the middle of a potato field near the town of Halden in southern Norway. Over the five years that fol-



A 1904 photograph shows the excavation of a Viking ship burial in Oseberg, Norway. The 71-foot-long vessel dating to A.D. 834 contained the remains of two women and an abundance of extraordinary grave goods. A 22-inch-long carved head made of maple wood depicting a dragon (left) is one of four such heads found in the ship's burial chamber. Their purpose is unknown.

GJELLESTAD, NORWAY



A mound (top) in Gjellestad, Norway, was found to contain a Viking Age ship burial (above). A soil core (left) shows the types of material Vikings used in such burials.

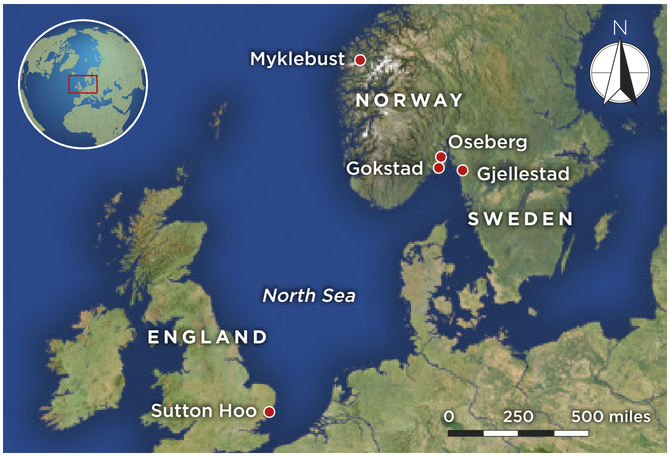
lowed, researchers excavated the remnants of a wooden ship more than 75 feet long that had been buried as part of a funeral. Dendrochronology and radiocarbon dating placed the ceremony in A.D. 800. Called the Gjellestad ship after the name of the farm where it was found, the burial was the first Viking ship grave to be excavated in more than a century.

Inspired by the Gjellestad excavations, researchers are now returning to some sites in Sweden and elsewhere across the Viking world and asking new questions about the role of these graves in Viking society. Their combined efforts are providing a new appreciation of the burials' complexity. "For so long, archaeology has been focused on the people and the objects within the graves," says archaeologist Rebecca Cannell of NIKU. "We're asking what happens when you turn your attention in a different direction."

These finds have led some archaeologists to propose novel interpretations of the burial mounds in which the ships and their contents were interred and of the tremendous resources Viking communities invested in these monuments. "One hundred years ago, people were mostly interested in the ships," says archaeologist Christian Rødsrud of the Norwegian Directorate for Cultural Heritage, lead excavator of the Gjellestad ship. "We're interested in the construction of the mound itself." These massive mounds, and the large community gatherings that accompanied their creation, point to an overlooked aspect of the ship burials' social and religious significance. Some scholars now suggest that an account in the Old English *Beowulf* comes closer to the archaeological evidence in many Viking ship burials and the spectacle that would have surrounded them than does Ibn Fadlan's description.

Today, burial mounds can be seen all along the coastal fields and rugged fjords of Norway, Sweden, and Denmark, some dating back as far as the Bronze Age, which, in this region, began in about 1800 B.C. and lasted until 500 B.C. "We have hundreds, if not thousands, of mounds," says archaeologist Morten Ramstad of the University of Bergen. Though many contain small boats, most don't contain ships, defined as vessels more than 50 feet long. The earliest ship graves in Scandinavia date to the eighth century A.D., coinciding with the beginning of the Viking Age (ca. A.D. 700–1066). This was a time of social ferment caused in part by a warming climate that boosted Scandinavia's population and spurred technological innovations, allowing people to travel faster and farther than they had before.

Seafaring was the lifeblood of the era. Scandinavians had used oared boats to travel along the coasts of the Baltic and North Seas for millennia, but when they started using sails around A.D. 700—a technology by then long employed in the Mediterranean—it ignited a revolution. Their mastery of sailing enabled Scandinavians to conduct raids as well



as trade across oceans, sending Viking warriors as far west as North America and as far east as Constantinople. From a ship's sails, one of which could require the wool of an entire flock of sheep, to its thousands of iron nails and carefully cut wooden planks, Viking vessels represented an enormous investment.

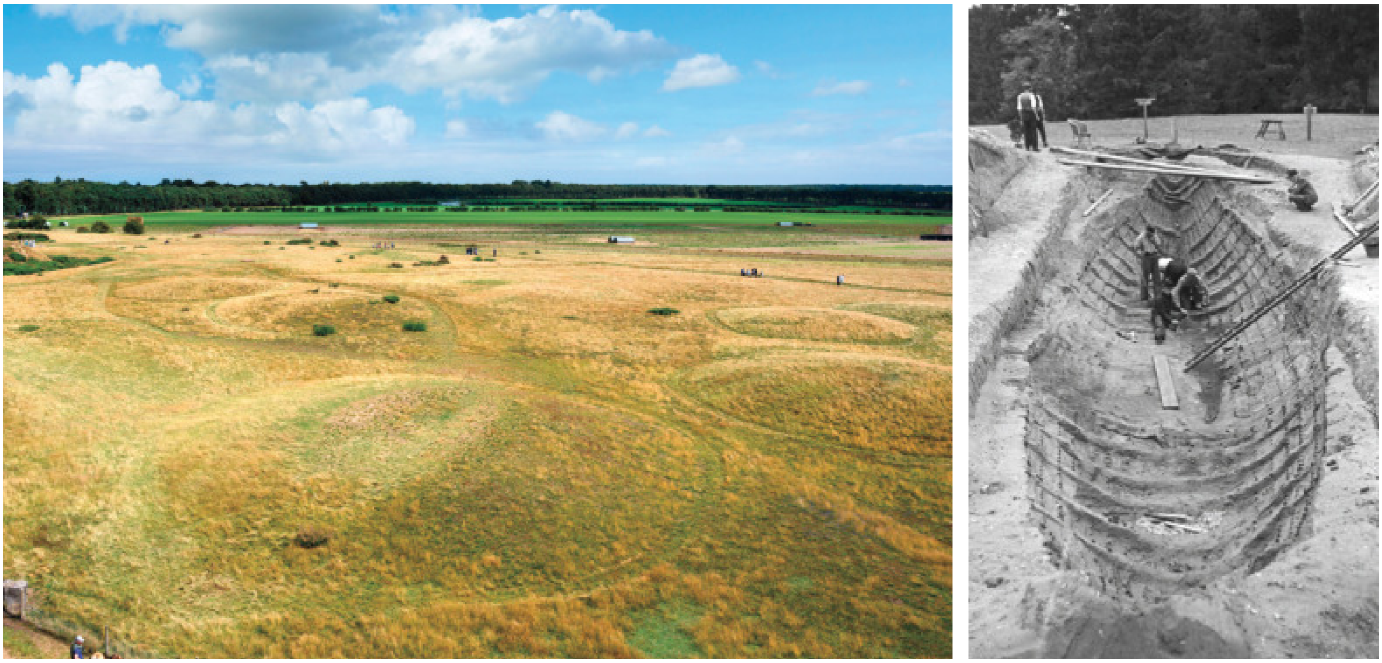
Not too long after the adoption of the sail, ships began to be included in some of the most impressive Scandinavian graves. Between about A.D. 700 and 950, ship burials appeared everywhere Vikings had a presence, including France, the British Isles, Denmark, and Estonia, though the majority have been found in Norway. Archaeologists believe these burials were once-in-a-generation events reserved only for the most powerful personalities of the Viking Age.

SURPRISINGLY, THE FIRST SHIP grave appears to lie far from Scandinavia, at a site known as Sutton Hoo in the east of England. There, a 90-foot-long ship was buried in about A.D. 610, not long after Anglo-Saxons first arrived from northern Germany and the Netherlands. The ship, which was excavated in 1939, was filled with riches including enameled gold jewelry, silver objects from the eastern Mediterranean, and an extraordinary worked iron-and-bronze helmet. In the middle of the vessel, excavators unearthed a nine-foot-long platform on which the body of an Anglo-Saxon king had been laid before a mound was built over the ship. (See "The Ongoing Saga of Sutton Hoo," November/December 2014.)

For decades after the discoveries at Sutton Hoo, most researchers disputed that there was any connection between the English burial and those in Scandinavia, pointing to the length of time between the Sutton Hoo ship burial and the earliest known ship graves in Norway and Sweden, which scholars then believed dated to the early 800s A.D. In 2023, however, Norwegian archaeologists found the oldest-known ship grave outside England, a burial on the coast north of Trondheim in central Norway that was radiocarbon dated to A.D. 700, forming a sort of bridge between England and Scandinavia. "Now I think that we can say Sutton Hoo really closes the gap in time," Rødsrud says.

Across thousands of miles and more than three centuries, examples of this type of burial share notable similarities. They contain ships covered by huge mounds of earth. The people on board were typically placed in a chamber at the center of the ship, surrounded by weapons, precious textiles, household items,

SUTTON HOO, ENGLAND



The site of Sutton Hoo (left) in England contains 18 seventh-century A.D. burial mounds. One mound, excavated in 1939, contained an Anglo-Saxon ship burial (right) that is the earliest known example of this burial style, which was later adopted by the Vikings.

VIKING FACTS OF LIFE

- **Oldest ship burial in Scandinavia: Trondheim, Norway, ca. A.D. 700**
- **Latest known ship burial: Northwestern France, Île de Groix, ca. A.D. 950**
- **First archaeologically excavated Viking ship burial: Vestfold, Norway, discovered 1852, date unknown**
- **Richest ship burial: Oseberg, Norway, ca. A.D. 834**
- **Most exotic ship burial contents: Two peacocks, Gokstad, Norway, ca. A.D. 900**
- **Largest Viking ship burial: Myklebust, Norway, 100 feet long, date unknown**
- **Smallest Viking boat burial: Port an Eilean Mhòir, Scotland, 15 feet long, tenth century A.D.**
- **Most unusual boat burial: nested burial for a man and a woman, Vinjeøra, Norway, ca. A.D. 850**
- **Farthest ship burials from Scandinavia: Salme, Estonia, A.D. 750**
- **Heartiest onboard meal: Nine-foot-long Atlantic halibut, Gjellestad, Norway, ca. A.D. 800**

and sacrificed animals including dogs, horses, and hunting birds. Provisions of food and drink were loaded aboard for feasts in the afterlife. Although the Gjellestad ship was plundered in the distant past, scattered evidence of these banquets survives, including a bone from the tail fin of a nine-foot-long Atlantic halibut.

Ship graves were often located at sites with long traditions of burial mounds, in or among graves dating from hundreds, or even thousands, of years earlier. They have been found atop Neolithic cemeteries and Iron Age sites. Many, including the Gjellestad ship, were next to settlements and cemeteries from the Migration Period (ca. A.D. 400–600). “There must have been a local narrative that these earlier people were the founders of these places,” says archaeologist John Ljungkvist of Uppsala University. “Placing new graves next to old ones is about collective memory.” When Vikings landed on the Isle of Man, they placed a burial in the middle of a Christian cemetery. Cannell doesn’t believe this was intended as a deliberate desecration or to signal dominance. “You could see it in a different way,” she says. “They’re trying to become part of the ritually significant places that already exist.”

For all their similarities, each ship grave also contains unique characteristics. “The burials share many of the same construction principles, and many of the artifacts inside are of the same type, but no two are alike,” says Rødsrud. Sometimes the ships were burned at the culmination of the funeral ceremony, and other times they were buried intact. Most ship burials were outfitted with weapons associated with burials for men, but some of the richest, including the extraordinary ship burial found in Oseberg in southern Norway, were for women. The dead were sometimes laid carefully on beds, while at other sites they were positioned sitting upright in the grave chamber. Still others were burned to ashes. In some burials, artifacts seem to have been carefully placed, while in others they appear to have been hastily thrown aboard, as though in an effort to make a quick escape or as the result of a rushed ritual performance.

In the last 10 years, Cannell has collected hundreds of soil cores from the Gokstad burial in southern Norway and from other mounds to dissect how they were constructed. Her work suggests the mounds were usually prepared in phases: First, turf was stripped away to expose the subsoil; then a depression was dug that would hold the ship upright. Once the ship had been dragged into place from a nearby beach or riverbank, a ring-shaped ditch was often dug around it to separate onlookers from the sacred space within, perhaps for protection against powerful magic that might be unleashed during the ceremonies. In the conclusion of Ibn Fadlan’s account, for example, a man walks backward holding a torch in one hand and covering his backside with the other on his way to light the ship on

GOKSTAD, NORWAY

fire. Scholars suggest this may have been intended to protect his orifices from the burial's potency.

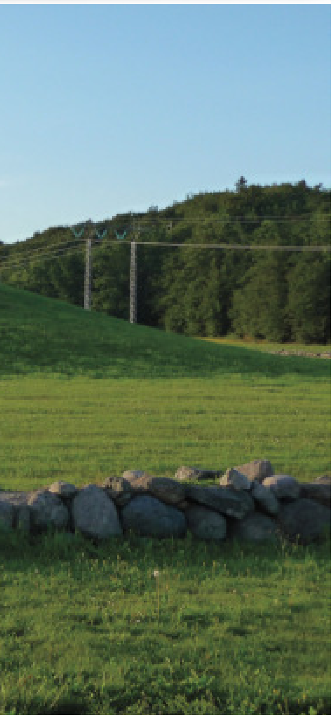
Next, gray-blue river clay that had been kept pristine was often spread around the ships. At Gokstad, the mound contained an intact ship almost 80 feet long. This was the final resting place of a 50-year-old warrior buried in around A.D. 900. (See "Revisiting the Gokstad," July/August 2014). Cannell was able to show that blue clay had been piled up around the ship's hull, creating the appearance of a waterline. "Clay or silt symbolizes the surface of the sea," Rødsrud says. "They even included the gangplank for going aboard."

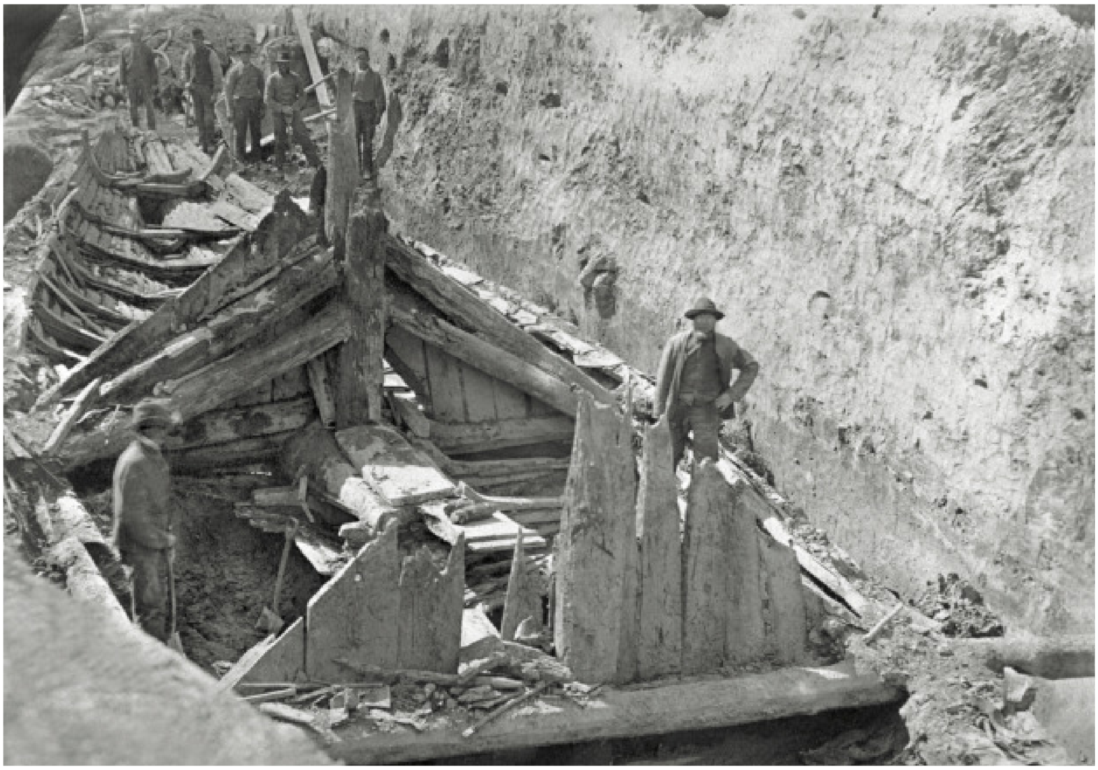
At Norway's Myklebust ship burial, which was first excavated more than 150 years ago, archaeologists recently revealed an even more dramatic twist on the oceanic scene. Encircling the mound—which, based on the number of boat nails and the outline of the charred vessel, archaeologists believe contained a 100-foot-long ship—excavators found a trench measuring more than 12 feet wide crossed by two bridges, forming what was essentially a moat. The trench was connected to a nearby creek, enabling whoever orchestrated the long-ago burial ceremony to fill it with water. "They burned a ship in a mound surrounded by water," Ramstad says. "That's mind-blowing."

Plant growth in turf blocks stacked for use in the mounds shows that the ships remained completely or partially uncovered for weeks or even months in their pools of clay and water before turf was piled up around them. The ship was then enclosed with dirt and stones, which in many cases later collapsed into the hollow spaces created by the burial chambers or the ship's decks. "We don't know how quickly these mounds were built," says archaeologist Lars Gustavsen of NIKU. "It could have been three weeks, or three months, or thirty years." The tops of some mounds were altered, or were the scene of later sacrifices that have been found atop them, suggesting they were used for long periods.

FROM A MODERN PERSPECTIVE, the huge mounds of earth and stone atop the ship graves, as well as the ships themselves, seem like archetypes of conspicuous consumption. Having the resources to gather enough people to inter a large vessel in a mound, and even to burn it, was a dramatic display of economic and political might. Archaeologists have tended to measure the importance of the person in a ship burial by the vessel's size and the height of the mound, which they saw as gauges of how much labor a chieftain could command.

Close examination of how the mounds were constructed reveals tremendous forethought and organization. Gustavsen believes that what mattered to the Vikings more than the mounds' size was how they were created and what they



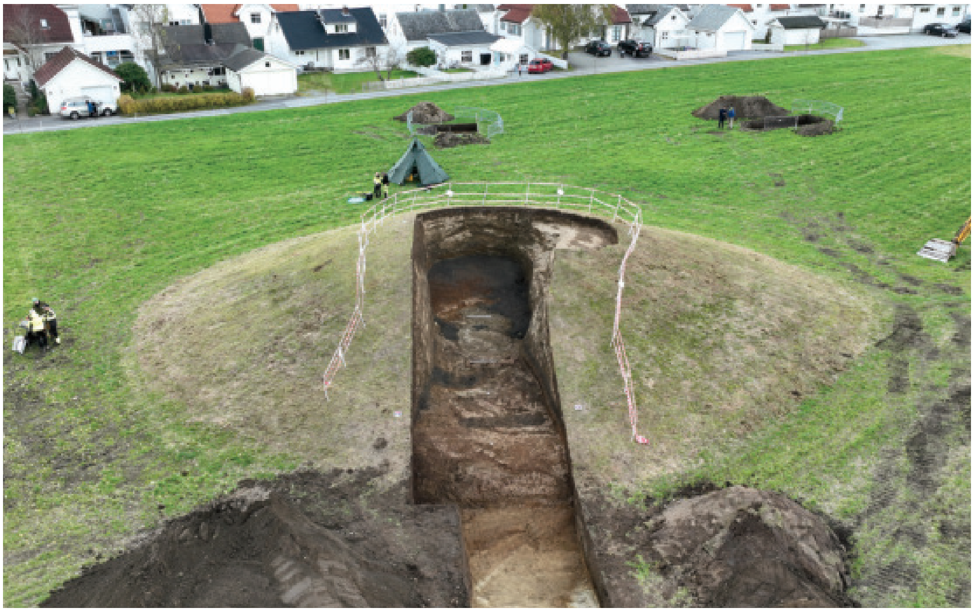


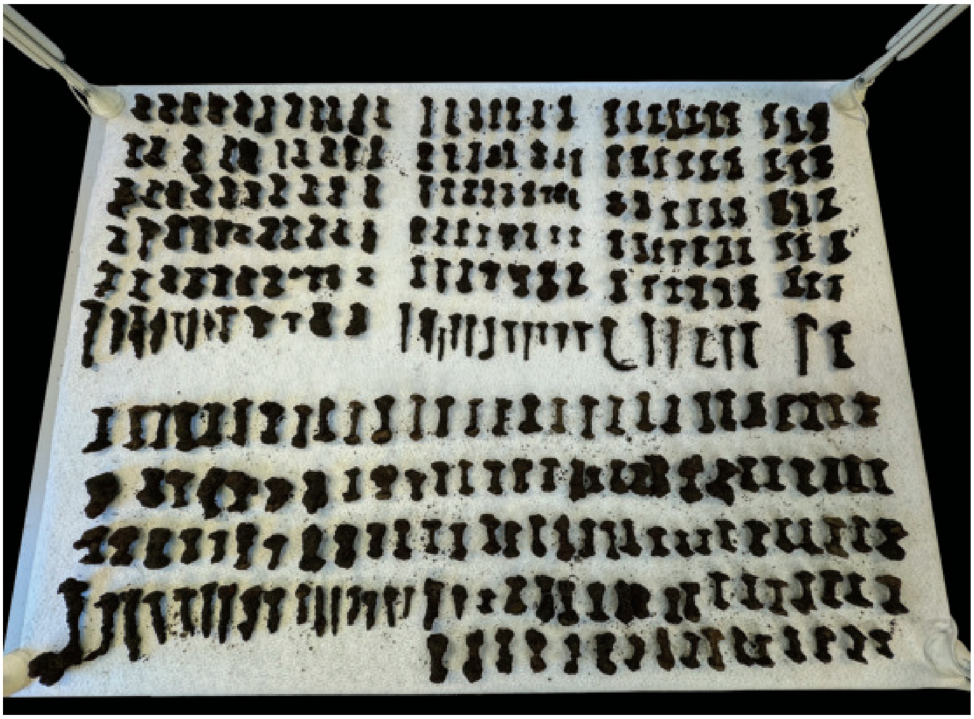
A soil core (top left) from the Gokstad ship burial in Norway shows the blue clay that the Vikings placed around the ship to simulate a waterline. The Gokstad mound (left) was first excavated beginning in 1880. It contained an 80-foot-long ship (above) dated to around A.D. 900.

signified. The mound itself, he thinks, was as important as the person inside. Viking sagas do not speak of kings being "buried in a mound." Rather, the rulers are referred to as "being mounded," emphasizing the strong connection between the chieftain's power and the mound. "I don't think they were thinking about economic cost," says Gustavsen. "People came together to make the mounds because it was seen as necessary for the community."

The construction of each mound tells a specific story about the people who erected it and their efforts to memorialize those buried within. "When we look at how the mounds are built, they're often very intricate," Cannell says. "It's not just sort of heaped-up dirt, which is what we would expect if the goal was to build it as fast or as efficiently as possible. A lot of the materials they used, such as river clay and cut blocks of turf, are very difficult to build with."

MYKLEBUST, NORWAY





New excavations (top) of a ship burial in Myklebust, Norway, identified a ring-shaped moat and hundreds of iron boat nails (above) that were part of a 100-foot-long vessel.

The Gjellestad ship mound, researchers believe, once rose 15 feet above the surrounding fields. By the time excavations began in 2019, however, centuries of farming had plowed it flat. Only because a hollow had been dug to accommodate the sleek lines of the 60-foot-long ship did any of the vessel survive. Even then, just the lower part of the hull, equivalent to what would have been below the waterline, was preserved.

Over the course of 1,200 years, the soil atop the ship had been compacted by the weight of the mound above it. Careful excavation methods that weren't conceivable when the first ship burials were identified have allowed researchers to make out details of the deliberate aesthetic and symbolic choices people made. The timber burial chamber in the center of the ship was surrounded by rectangles of cut turf, compressed over time to layers less than an inch thick. Based on grass preserved in the burial, Rødsrud imagines that a mound built in early autumn might have looked like a golden dome rising above the ship. "It was harvest season, and the grass in the fields was all yellow," he says. At other mounds, cores show that grassy turf squares were painstakingly arranged in brown-and-green checkerboard patterns of upside-down and right-side-up grass.

The materials used to build the mounds were carefully sourced, seemingly with symbolic intent. Cannell has found that for some mounds, turf was selected from different locations, sometimes miles away, and often from the banks of rivers. The turf, cut from productive farming or grazing land that would

A bucket made of yew, brass, and bronze was one of the first objects to be discovered in the Oseberg ship burial in 1903. The bucket measures 16.5 inches in diameter and was found with six or seven wild apples still inside.

have taken decades to regrow in Norway's harsh climate, would have represented a type of wealth. Earlier graves, perhaps from mounds or cemeteries nearby, were also incorporated, judging by the discovery of human remains that are centuries or more older than the ships themselves. "A lot of Viking mound building, or material, or the way they thought about the world, can seem a bit weird," Cannell says. "Clearly, the size of the mound wasn't necessarily the most important factor."

Viking ship burials, then, were not just the vessels and their contents, but mounds layered with symbolism that could be seen as the Viking equivalent of cathedrals, with all the levels of meaning and community tradition embodied by those buildings. Viewed from this perspective, many of the architectural and design features of the ship mounds begin to seem less obscure. They functioned as grave markers, in part, but archaeologists increasingly believe that they were also stage sets for performances put on for a large audience's benefit. "It's a grand spectacle over many days when an important person dies," Ljungkvist says. "It's theater. It's a display, the same as royal funerals today."

From what Ramstad has reconstructed, the Myklebust ship burial was just such a happening. Inside the vessel, the site's original excavator, Anders Lorange, discovered a bronze cauldron filled with the cremated remains of a man in his 30s, along with the bones of a lamb or young goat, evidence that at least part of the burial rituals took place in springtime. Among the burned bones was an arrowhead, suggesting a wartime injury. In the cauldron and scattered around the ship were 44 shield bosses—each one perhaps representing a member of the ship's crew.

At some point, the Myklebust ship was set alight, but that wasn't the ceremony's finale. Lorange found that the cauldron hadn't been warped or damaged by heat. Ramstad believes that the man's body was burned elsewhere, perhaps after his death on the battlefield or at sea. His remains were then collected and brought to Myklebust, where the cauldron was placed on the burned remains of the ship before a mound was erected over it. "That complexity tells you something about the effort that went into it," says Ramstad. "This shows that ships were set on fire, as the written sources tell us."

If the ship burials were grand theater, the ships themselves were the sets. In grave after grave, the vessels seem to have been staged to appear to be on the verge of a voyage. The Oseberg ship was discovered with oars at the ready in their ports, as if the ship were prepared to venture onto the high seas. A large rock had been placed next to the ship's prow, likely tied to it as a mooring point. "Ships aren't just objects in the burials," says Jan Bill, an archaeologist at the Museum of Cultural History in Oslo. "They depict a departure scene."

For years, scholars relying on Ibn Fadlan's account for clues came away with the impression of burials as chaotic, almost senseless scenes of violent excess. However, Bill suggests that when it comes to understanding the mindset behind Viking ship burials, a better source might be *Beowulf*, the epic poem written down by English monks in the tenth or eleventh century A.D. that recounts events that took place several hundred years earlier. Beowulf, a mythical Scandinavian warrior and king, is the poem's hero, but its opening stanzas describe the burial of his predecessor, a famed king named Shield Sheaf's Son, in a "craft fit for a prince." The anonymous poet recounts that "treasure filled it to the mast, and there was plentiful loot from foreign lands, booty, loaded into it." Shield's followers launch the ship to sea once more, "and let him drift to wind and tide, bewailing him and mourning their loss."

This ceremony had a clear purpose. Shield, the poem claims, "came over the waves as a child," washing up on a Scandinavian beach in an empty boat as a baby. In other versions of the story, he was accompanied by a bundle of wheat. His burial in a ship signified a return to the sea whence he came. Other epics tell a similar story, identifying Shield as a semi-mythical ancestor of later kings of Denmark and Sweden. Bill says that the spectacular ship burials of the Viking period may have been intended as reenactments of Shield's story. By re-creating the king's grand funeral, later Scandinavian rulers borrowed Shield's legend to connect themselves to a valorous ancestor and legitimize their rule. "These ship burials may actually be representations of that origin myth," Bill says. "They're a way of arguing that you can be king."

They stretched their beloved lord in his boat, laid out by the mast, amidships, the great ring-giver. Far-fetched treasures were piled upon him, and precious gear. I never heard before of a ship so well-furbished with battle tackle, bladed weapons, and coats of mail. The massed treasure was loaded on top of him: It would travel far on out into the ocean's sway. They decked his body no less bountifully with offerings than those first ones did who cast him away when he was a child and launched him out alone over the waves. And they set a gold standard up high above his head and let him drift to wind and tide, bewailing him and mourning their loss.

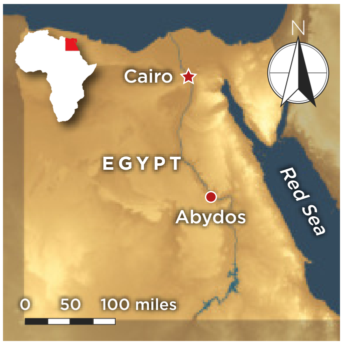
Beowulf, *translated by Seamus Heaney* ■

Andrew Curry *is a contributing editor at* ARCHAEOLOGY.

In Search of Lost Pharaohs

Anubis Mountain conceals the tombs of an obscure Egyptian dynasty

By Ilana Herzig



At the base of a pyramid-shaped peak in the ancient Egyptian city of Abydos lies the tomb of an unknown pharaoh. After decades of excavations at the site, and considering the Egyptians' usually meticulous recordkeeping, it might seem implausible that any of these ancient rulers and their hidden burials remain to be unearthed. But, a team led by Egyptologist Josef Wegner of the Penn Museum has made just such a discovery in the royal necropolis at Anubis Mountain, which the Egyptians named after the jackal-headed god of mummification. Wegner believes the newly discovered pharaoh belonged to the short-lived Abydos Dynasty (ca. 1650–1600 B.C.), which held sway over parts of Upper, or southern, Egypt during the Second Intermediate Period (ca. 1640–1540 B.C.), a tumultuous time in the country's history. Unlike the precise records that exist for most dynasties between the First, which began its rule in about 3000 B.C., and the 30th, whose pharaohs reigned until 343 B.C., the Abydos Dynasty wasn't recorded in any official list of kings. The Abydos rulers only appear in what's known as the Turin King List, a fragmentary thirteenth-century B.C. papyrus that contains a catalog of Egypt's many rulers up to that time. Indeed, scholars debated whether the dynasty actually existed until 2014, when Wegner's team uncovered the tomb of the Abydos Dynasty king Senebkay in the Anubis Mountain necropolis. (See "Egypt's Forgotten Dynasty," July/August 2014.)

For more than a decade, Wegner's team has been searching for more evidence of the obscure dynasty. The Anubis Mountain necropolis was founded around 1850 B.C. by Senwosret III (reigned ca. 1878–1840 B.C.), a 12th Dynasty pharaoh who constructed his expansive burial chamber there. To date, the team has unearthed 13 royal tombs, nine of which Wegner believes belonged to the Abydos Dynasty. In January 2025, the team excavated a looted tomb buried under more than 35 feet of sand. Wegner thinks this burial held an Abydos Dynasty pharaoh because its architectural elements and decoration match the other tombs believed to belong to the dynasty. Like those nine tombs, this one exists within a preexisting Middle Kingdom (ca. 2030–1640 B.C.) royal enclosure.

Faded polychrome paintings in the tomb's entryway

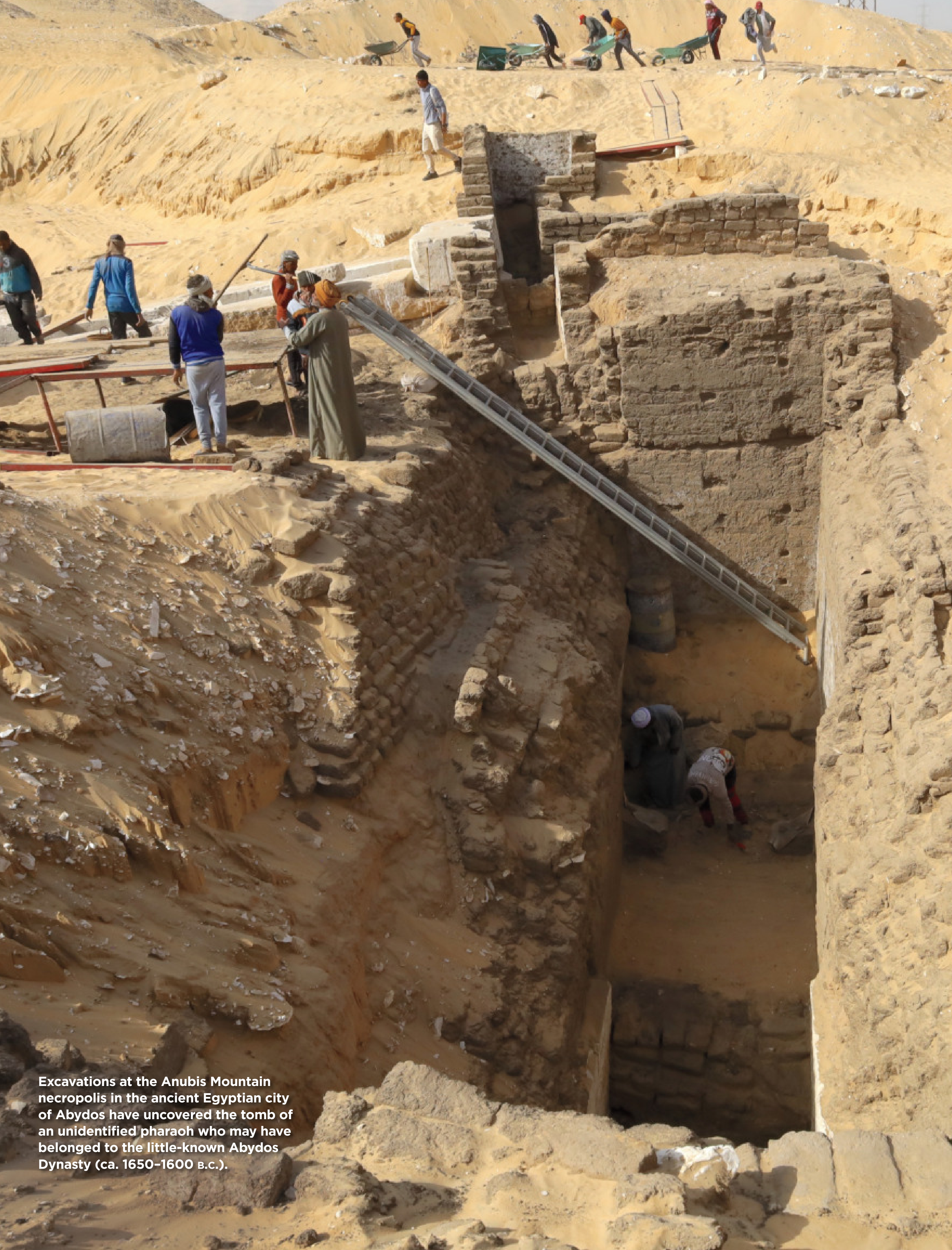
The tomb, which features 16-foot-high mudbrick vaults and a decorated entryway, is much larger than any other tomb attributed to the dynasty thus far. On one wall in the tomb's entryway, the team discerned depictions of the sisters Isis and Nephthys, goddesses associated with the afterlife, in fading swatches of polychrome paint. Alongside the goddesses are faint, indecipherable traces of hieroglyphs. "We know the hieroglyphic text on the tomb would have contained the king's name," says Wegner, "but it was damaged just enough by tomb robbers that it wasn't preserved."

Throughout Abydos' history, from its foundation in the Predynastic period, around 4000 B.C., until the Roman era, which began in 30 B.C., it was one of Egypt's most sacred cities. The Egyptians believed it was the burial place of Osiris, god of the underworld, and thus a gateway to the afterlife. The city was home to the tombs of Egypt's earliest pharaohs and hosted festivals dedicated to Egyptian kingship for more than three millennia.

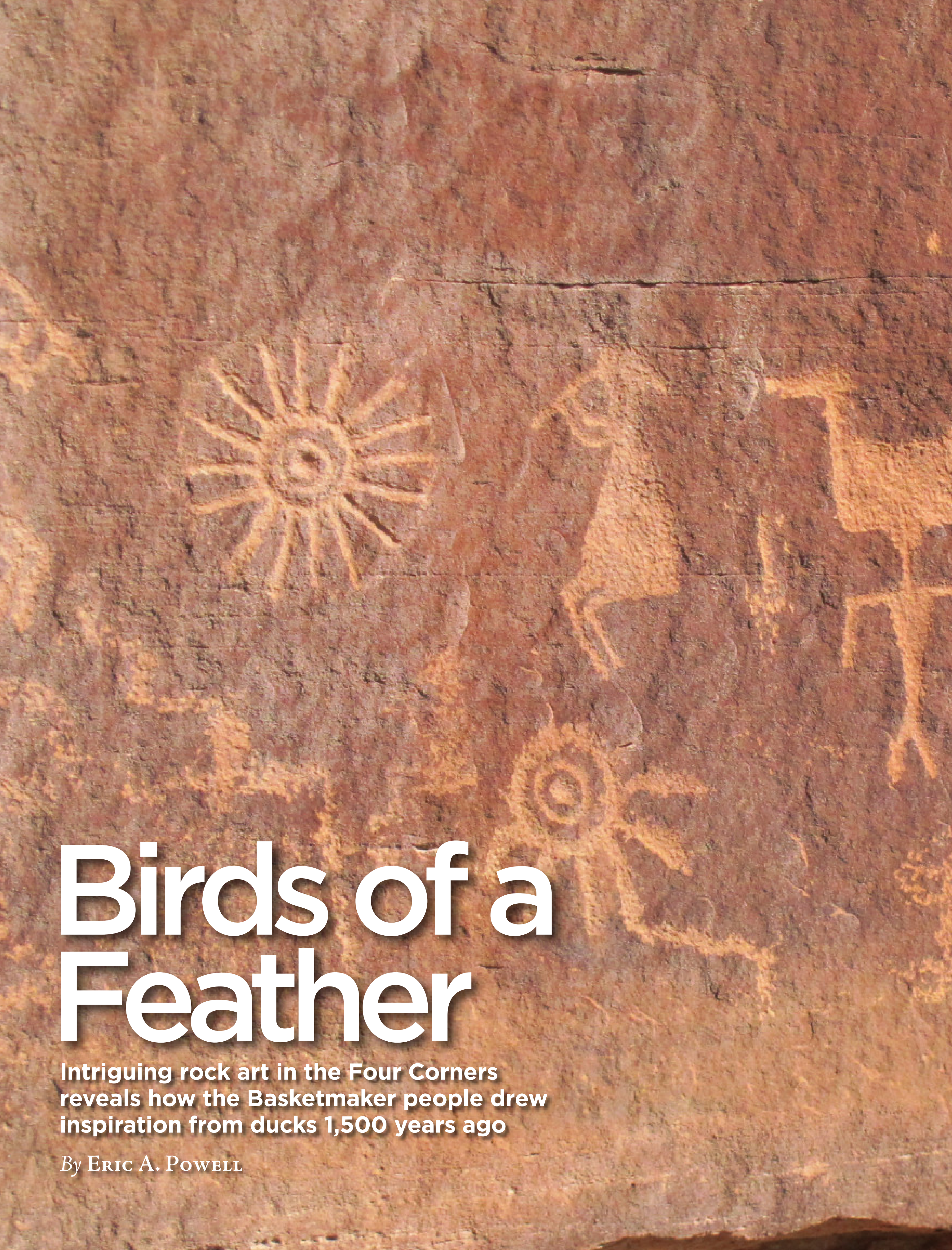
The Abydos Dynasty pharaohs likely ruled for only a few generations during the Second Intermediate Period. Punctuated by political and economic turmoil, this era saw Egypt split into warring regimes: one led by the Hyksos, a Semitic-speaking people from the Levant, in the north, and the other by the Thebans in the south. Abydos was caught in the middle. When the Hyksos came to power around 1650 B.C., a group of nobles based in Abydos likely refused to submit and established an independent dynasty. "At some point the dynasty and territory of the Abydos kings was absorbed into another group of kings," Wegner says. "Or perhaps they were predecessors to the later 17th Dynasty [ca. 1635–1550 B.C.] kings."

Wegner suggests that the pharaoh in the newly discovered tomb may be an unknown predecessor of Senebkay. It's possible, he says, that the tomb may contain the burial of Senaiib or Paentjeni, kings who both dedicated monuments at Abydos, but whose tombs remain undiscovered. "We know bits and pieces about the political structure and the events of the Second Immediate Period, but the overall picture is still very murky," says Wegner. "That's where these tombs are adding crucial new evidence." ■

Ilana Herzig *is a senior editor at* Archaeology.



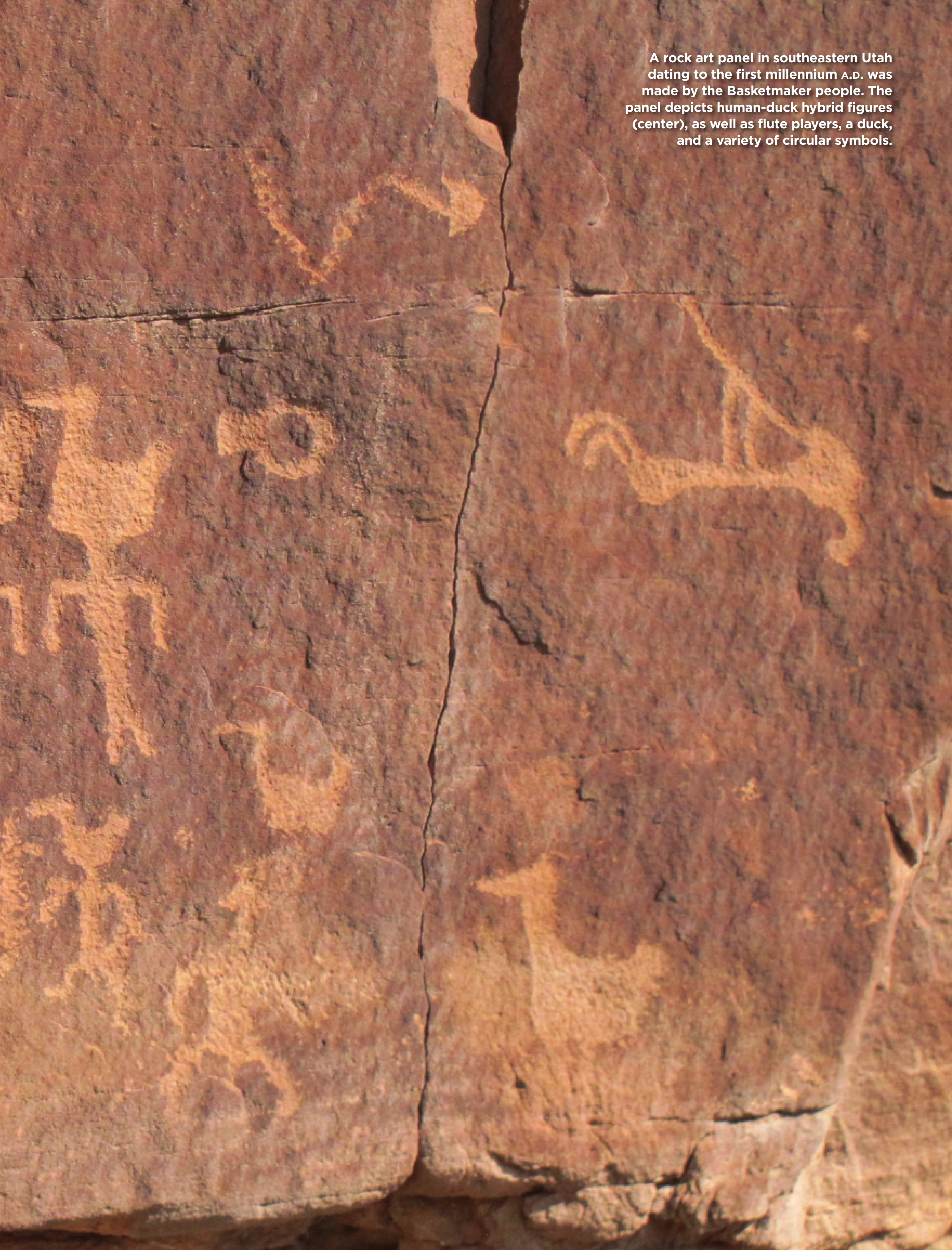
Excavations at the Anubis Mountain necropolis in the ancient Egyptian city of Abydos have uncovered the tomb of an unidentified pharaoh who may have belonged to the little-known Abydos Dynasty (ca. 1650–1600 B.C.).



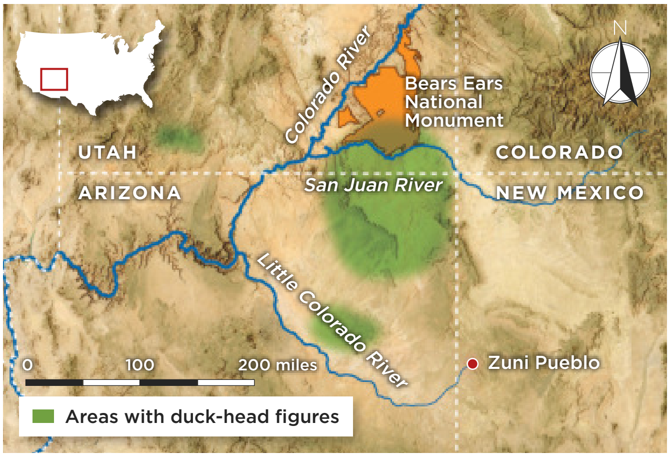
Birds of a Feather

Intriguing rock art in the Four Corners reveals how the Basketmaker people drew inspiration from ducks 1,500 years ago

By Eric A. Powell



A rock art panel in southeastern Utah dating to the first millennium A.D. was made by the Basketmaker people. The panel depicts human-duck hybrid figures (center), as well as flute players, a duck, and a variety of circular symbols.



You don't have to be a birder to recognize a duck call. The courtship whistles, odd cackles, and persistent quacking of ducks are some of the natural world's most familiar sounds. In 2024, the U.S. Fish and Wildlife Service estimated that the North American population of wild ducks stands at around 34 million. Mallards, the most common duck species, are reckoned to number 6.6 million. Federal wildlife specialists arrive at these figures through annual surveys of duck breeding grounds, conducted from May to June, that allow them to forecast the fall flight, or the number of ducks that will migrate that autumn. Some scholars have suggested that an average fall flight before Europeans arrived in North America could have seen as many as 400 million ducks heading south. The cackling and quacking heard on the banks of the continent's waterways in those days must have been deafening. For the Ancestral Puebloan people living in the Four Corners region near the San Juan River some 1,500 years ago, those calls seem to have taken on special resonance.

In the canyons of southeastern Utah and northeastern Arizona, researchers studying Native American rock art have long remarked on what archaeologist Polly Schaafsma of the Museum of Indian Arts and Culture calls the "duck complex." These paintings, known as pictographs, and carvings, or petroglyphs, feature ducks as central actors in scenes whose meaning scholars still debate. The birds are often shown sitting on peoples' heads, creating what appear to be duck-human hybrids. "No other bird or animal is depicted this way," says Schaafsma. Often a flute player is shown serenading the figures.

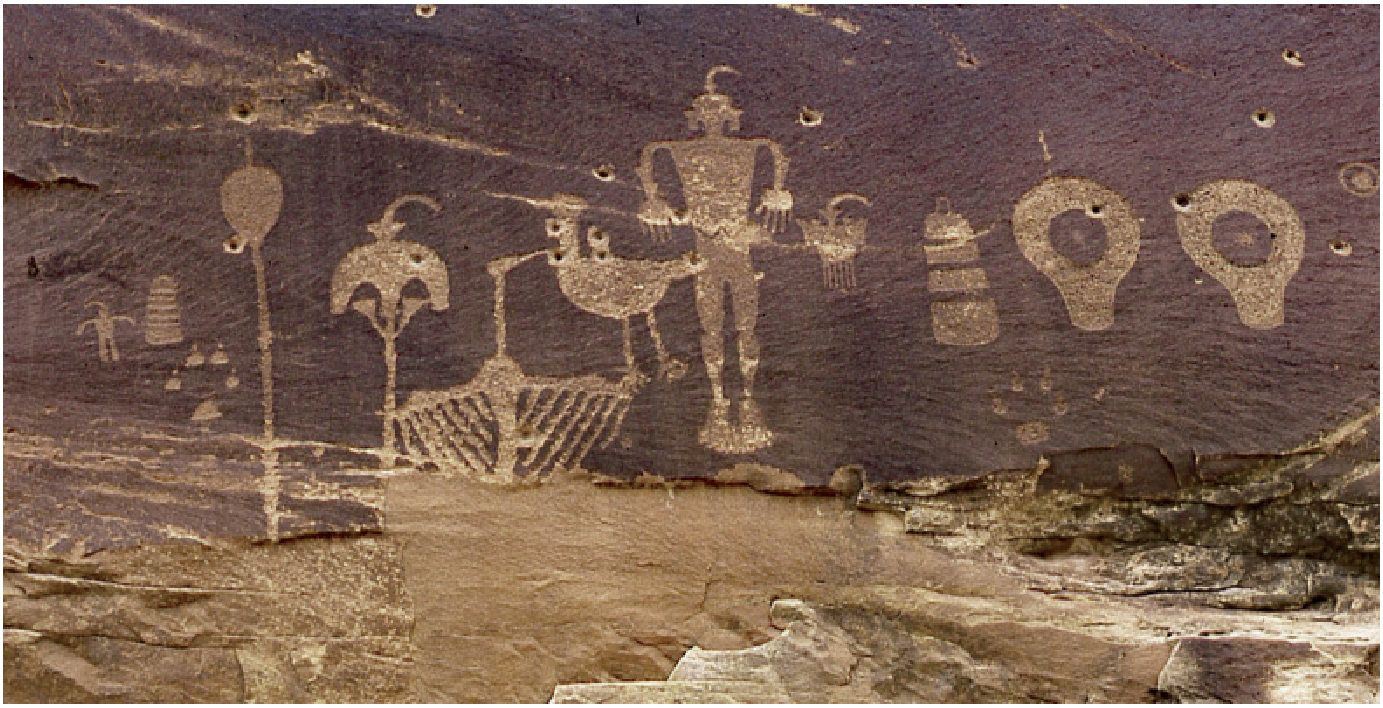
Based on the style of these duck-head figures, scholars believe the depictions date to between roughly A.D. 550 and 750 and were made by a people early twentieth-century archaeologists named the Basketmakers. During this era, people were just beginning to make their homes in permanent settlements and were more reliant on agriculture than their ancestors had been. As life in the Southwest transformed, these farmers seem to have developed new ideologies and ritual practices to meet the challenges presented by a changing world. For many people along the San Juan River during this period, ducks seem to have become important partners in negotiating these novel challenges.

The earliest Basketmaker people in the Four Corners began planting corn, or maize, around 1500 B.C. Maize was an import from Mesoamerica, where it was first cultivated around 7,000 years ago in central Mexico. Farmers in the American Southwest didn't initially settle down in permanent villages near their fields. Instead, early Basketmaker people seem to have moved with the seasons just as their hunter-gatherer ancestors had, and game remained as important to their diet as crops. By A.D. 550, Basketmaker people were planting maize, as well as squash, much more extensively and living in dugout dwellings known as pit houses in family hamlets near their fields. Around the same time, they first began to make pottery.

Archaeologist Benjamin A. Bellorado of the Arizona State Museum notes that in the first half of the first millennium A.D., Basketmaker rock art made in the vicinity of the San Juan River seems to focus on life-size portraits of actual individuals. "They're shown wearing specific headdresses and clothing and have other traits that suggest they are meant to be real people," says Bellorado. These figures are often depicted wielding spear-throwers, or atlatls, and seem to hurl their weapons at prey such as bighorn sheep, or at other human figures. They are sometimes shown carrying what appear to be staffs and wearing their hair in topknots decorated with quail feathers. Around A.D. 550, Basketmaker artists began to focus on depicting groups of simplified human figures rather than emphasizing individuals. In the canyonlands surrounding the San Juan River, cranes, quail, and the occasional turkey are shown alongside humans, but ducks resting on the heads of human figures dominate the bestiary of this later Basketmaker rock art.

A mallard, the most common duck species in North America, swims in southeastern Utah.

The significance of ducks for Basketmaker people is apparent from a rock art panel in a small canyon north of the San Juan River in what is today Utah's Bears Ears National Monument. There, large, meticulously carved figures, in what scholars call the Wolfman panel, amount to a display of items and creatures valued in Basketmaker ceremonial practice. At the center of the panel is a human figure wearing a topknot decorated with a quail feather. To the figure's right stands a large duck, and to its left is a human head. Other items on the panel include

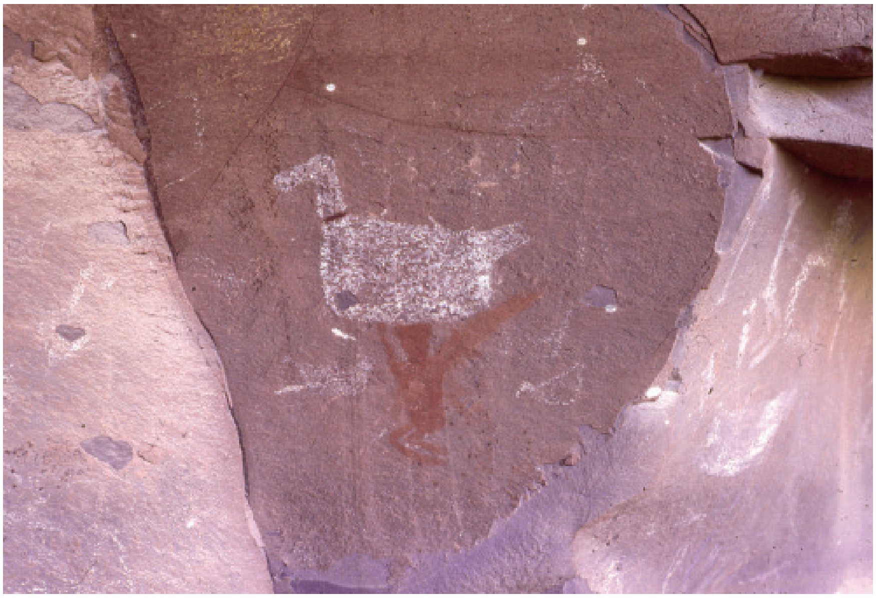


A group of petroglyphs in southeastern Utah known as the Wolfman panel contains a human figure (center) flanked by powerful creatures and objects. To the figure's right, they include a duck, a crane, a ceremonial staff, and a spear. To the figure's left are a human head, a medicine bag, and a pair of circles, possibly badges. Depictions of wolf paw prints give the panel its name.

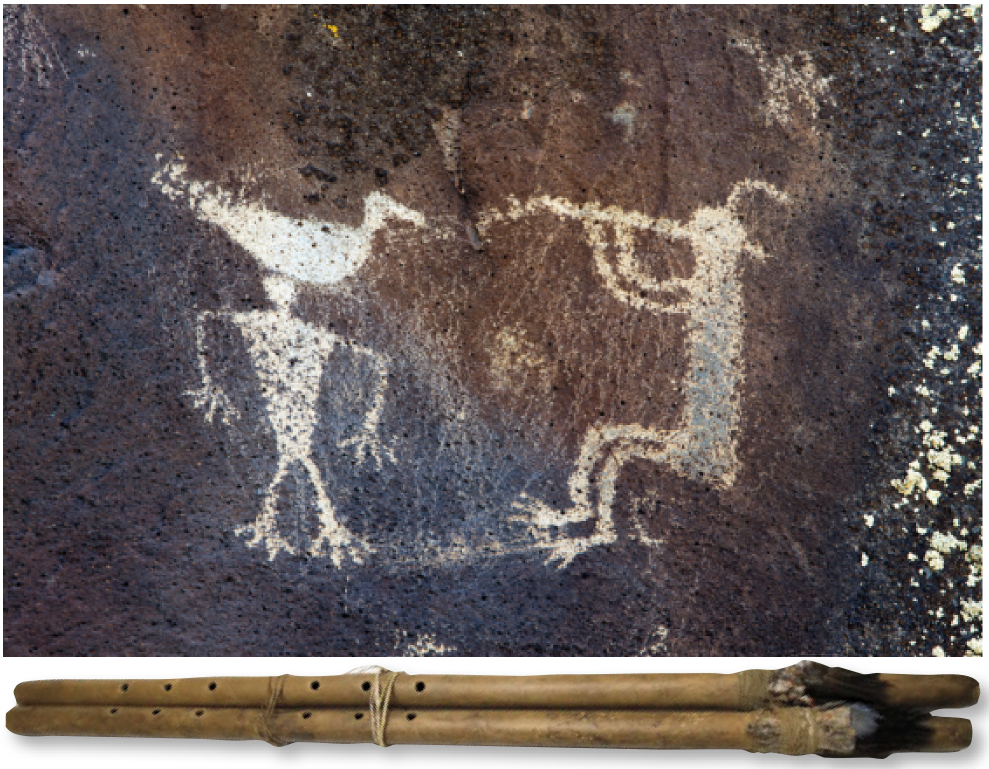
a ceremonial staff, a spear, two containers or medicine bags, and two circular symbols whose significance researchers do not agree on. Bellorado suggests that the symbols could represent wooden objects decorated with turquoise mosaics that might have been badges of office for important individuals. The scene also includes depictions of wolf paw prints, which give the artwork its name. Schaafsma believes that all the items must have been key to conducting ceremonies. "Everything in the panel bestows a sense of authority on the main figure," she says. "The fact that the duck is right next to this individual reinforces the bird's significance for the Basketmaker people."

Near the beginning of the Pueblo I period (A.D. 750–900), when Ancestral Puebloans began living in villages consisting of aboveground masonry houses, people in the Four Corners appear to have stopped including duck-head figures in their rock art. Nevertheless, ducks continued to be symbolically important in the region. Zooarchaeologist Katelyn J. Bishop of the University of Illinois Urbana-Champaign notes that Southwestern people collected duck feathers and made finely crafted duck-shaped ceramic pots and figurines for centuries after their forebears had stopped depicting duck-human hybrids on canyon walls. "They begin making duck pots in the Pueblo I period, and they get more elaborate over time," says Bishop. "Ducks are associated with water, so it's possible the pots were used to hold water, but it's hard to say. We do know that the birds continued to be meaningful to Ancestral Puebloans." Why people stopped creating duck-head figures, however, is a mystery.

NUMEROUS BASKETMAKER SITES have been excavated in the Four Corners region, and archaeologists have yet to find any evidence that people living there hunted ducks. They have, however, unearthed bird bones suggesting



A pictograph in Utah's Bears Ears National Monument portrays a large white duck atop a red human figure with its legs drawn up, suggesting that the figure is in flight.



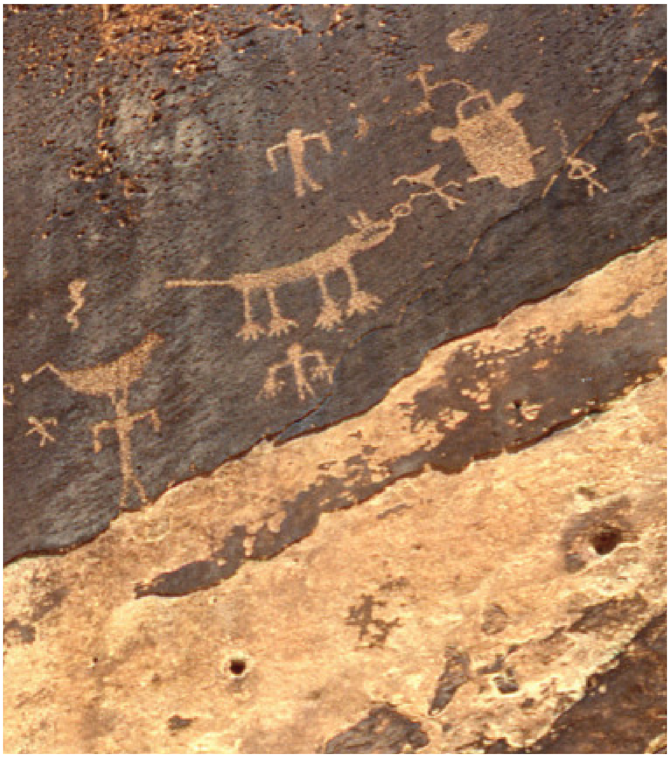
In southwestern Utah, a pictograph (top) depicts a duck-head figure and a flute player. The oldest known flutes in North America (above) were found at a cave in northeastern Arizona and date to the Basketmaker period.

that Basketmaker people consumed turkeys and quail. "Bird bones preserve well at sites in the arid Southwest," says Bishop. "But there is a relative absence of duck bones in archaeological sites, suggesting that they weren't a part of the diet."

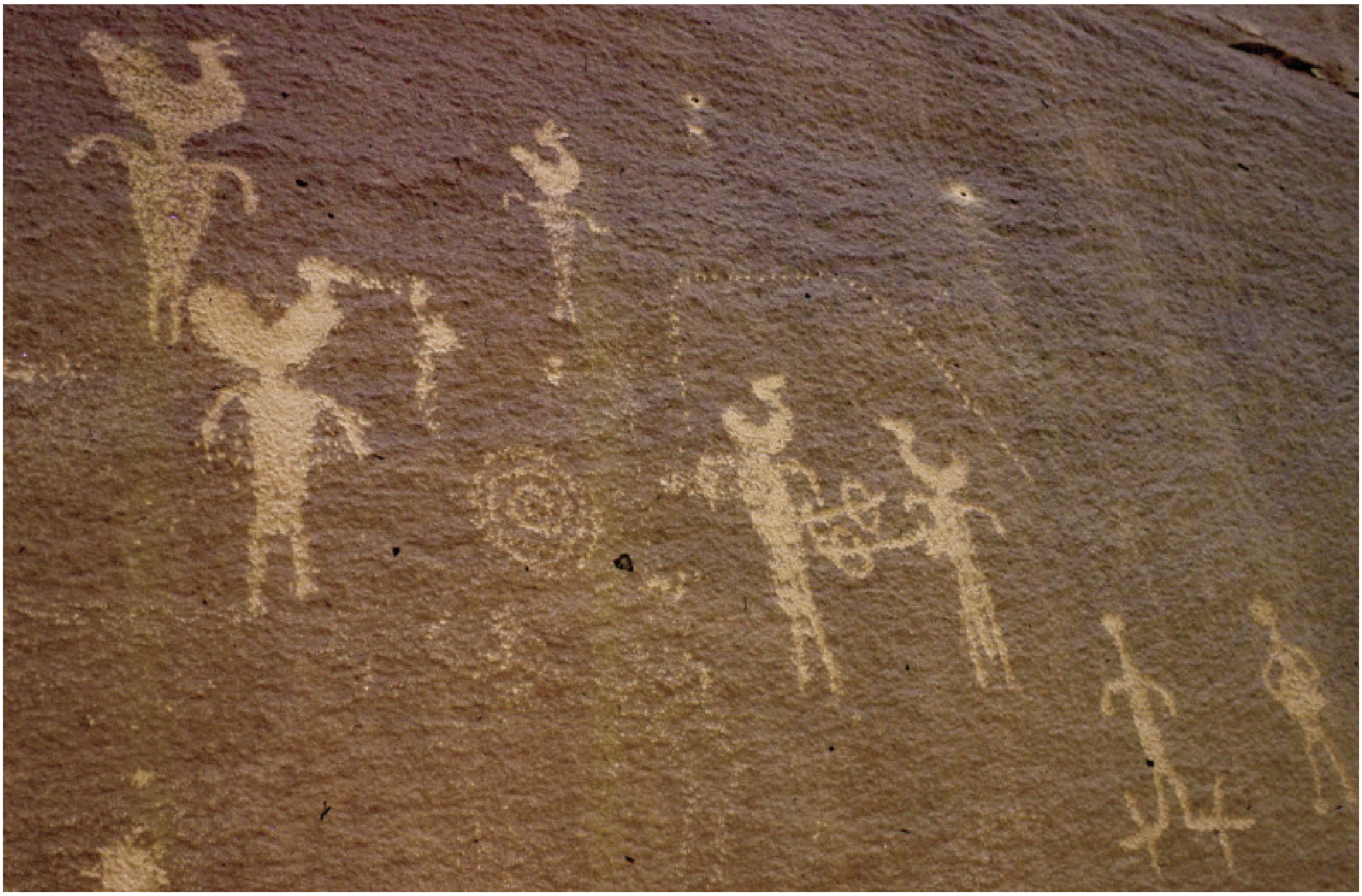
Some archaeologists have speculated that ducks represented a single Basketmaker clan, much as animals symbolize modern-day Pueblo kin groups, including the Hopi Bear and Spider Clans. In this scenario, the duck-head figures would have served as a kind of logo for a clan whose descendants eventually spread throughout the region. Other scholars have proposed that the duck-head figures might all have been meant to depict a single deity. Schaafsma believes clues to the importance of ducks might lie in present-day Pueblo oral traditions that give these birds a special role.

According to traditions of the Zuni people in western New Mexico, a duck guides the blind god Kiaklo as he wanders the Earth. Ancestral Zuni spirits are also believed to transform into ducks to travel between Zuni Pueblo and a lake known as Kolhuwalaaw'a, the underwater home of the spirits. These beliefs were recorded some 1,500 years after Basketmaker people created images of duck-head figures. Nevertheless, Schaafsma says these oral traditions suggest that people in the Four Corners region revered the duck's ability to travel through many realms with ease. "The duck is at home in the sky, walks on the land, swims on the water, and dives under the water for minutes at a time," she says. "Of all the birds, ducks seem to most explicitly traverse a layered cosmos." For the Basketmaker people, combining themselves with an animal that possessed the adaptive abilities of the duck would have been especially meaningful, says art historian Anna Blume of the Fashion Institute of Technology. "These are really powerful hybrids," she says. "In the imagination of the people who made them, these murals would have given them access to that special connection."

If it was important for Basketmaker ritual specialists to break through the boundaries of the natural world to interact with the spirit world, ducks would have been the ideal animal to call upon. Though no examples of rock art in the region are known to depict ducks with their wings outstretched as if in flight, some do appear to show the birds in motion. One panel in northern Arizona shows a group of more than a dozen ducks in a row, perhaps swimming. Schaafsma points to several instances of duck-head figures whose loose limbs seem to imply they are floating in space. Other people with ducks on their heads bend their legs in poses that might suggest they are airborne. Schaafsma also believes that the large number of duck-head figures depicted standing in front of flute players, as well as some that



A petroglyph panel in Bears Ears National Monument features a duck-head figure spearing a mountain lion in the nose.



A rock art panel in southeastern Utah features three duck-head figures watching as two others seem to duel using spear-throwers. Two of the ducks have open beaks, suggesting that they are quacking.

play the flute themselves, is significant. Perhaps, she suggests, Basketmaker people believed the sounds of flute music aided the duck-head figures as they carried messages to and from the supernatural realm.

Music must have been an important dimension of Basketmaker life. The oldest known wooden flutes in North America, dating to between A.D. 620 and 670, were discovered at a Basketmaker site in northeastern Arizona. "The fact that these murals include flute players may also point to what was happening when people were making or viewing them," says Blume, who thinks that music could have accompanied ceremonies celebrating the creation or viewing of rock art. "What was happening in the murals spilled out into the world, and the world just as likely spilled back into the murals," she says. "The art was a bridge between different realities."

Basketmaker artists also depicted duck-head figures in scenes that do not feature flute players. On occasion they are shown using projectiles on panels that illustrate hunting or conflict. In one panel in Bears Ears National Monument, a duck-head figure holds a fistful of spears in one hand while hurling four of the projectiles with the other toward an unknown target. Schaafsma believes Basketmaker people associated both ducks and projectiles with the concept of supernatural flight that enabled communication with spiritual realms. Another group of petroglyphs in Bears Ears National Monument features a long line of bighorn sheep, a flute player, and a huge medicine bag, alongside which a duck-head figure spears a mountain lion in the nose. "Although we'll never know exactly what they intended it to mean," says Schaafsma, "what is depicted here implies that the duck bestowed enough spiritual power on the hunter to overcome a large predatory animal."

Perhaps no other example of Basketmaker rock art captures the power of the duck-head motif better than a scene north of the San Juan River in Utah. The panel depicts a supernatural competition of sorts in which two duck-head figures brandish spear-throwers in a duel. Three other duck-head figures stand to the side of the duelists, seeming to watch the confrontation. At least two of the ducks have raised heads and open beaks, as if making noises to encourage the duelists. "Looking at this panel, you can almost hear them quacking," Schaafsma says.

If there were, in fact, anything like 400 million ducks calling to one another during their fall flight, their quacks must have been a reminder to Basketmaker people of the remarkable abilities of these birds—so at home in the sky, on the land, and under the water. ■

Eric A. Powell *is deputy editor at* ARCHAEOLOGY. *To see more images of duck-head figures from the American Southwest, go to archaeology.org/ducks.*

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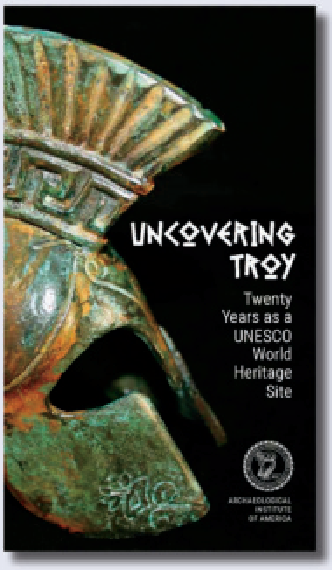
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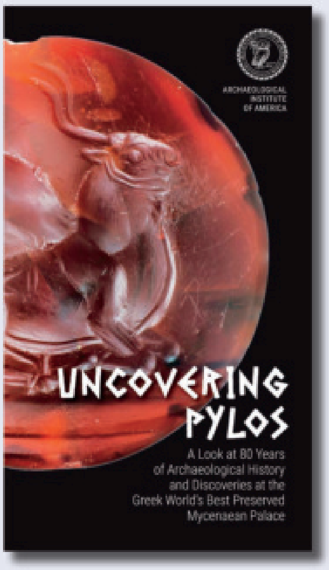
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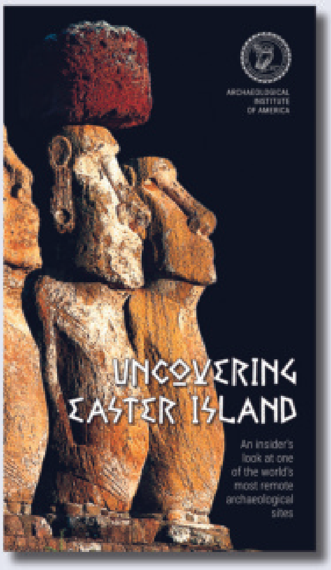
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A view of Duke of Gloucester Street in Williamsburg, Virgina, showing rebuilt colonial-era shops and houses. During a century of investigations into the city's past, archaeologists and historians have discovered building foundations and architectural details that have enabled these reconstructions. They have also unearthed more than 60 million artifacts.

LETTER FROM WILLIAMSBURG

A NEW LOOK AT AN OLD CITY

Archaeologists are reconstructing the complicated 400-year history of Virginia's colonial capital

By Andrew Lawler

A torrential spring downpour had left a sea of mud at a construction site in the old Virginia capital of Williamsburg, but archaeologist Jack Gary seemed oblivious to the muck as he held out a small silver disk. That morning in 2024, his team had discovered the worn Spanish half real in the cellar of a demolished colonial-era manor house. The coin had been minted, Gary explained, in Lima, Peru, 3,500 miles to the south. The team had also unearthed a fragment of a delicate Chinese teacup, an African cowrie shell, and pieces of an English-made leaded glass window. "We now have finds from four continents," says Gary. "This shows how connected the residents were with the wider world." After analyzing bricks from the house's cellar, Gary, director of archaeology at the Colonial Williamsburg Foundation, has concluded that the structure is likely a rare example of a prestigious home built before the town became Virginia's capital in 1699. The rich array of objects left behind when the house was torn down in the late 1730s is evidence that a prosperous family once lived there. The tiny cowrie shell, however, reveals the other side of that genteel affluence: In colonial Virginia, prosperity was built on the backs of enslaved laborers brought from West Africa to work the tobacco fields.

Gary and his team were rushing to recover what they could before work

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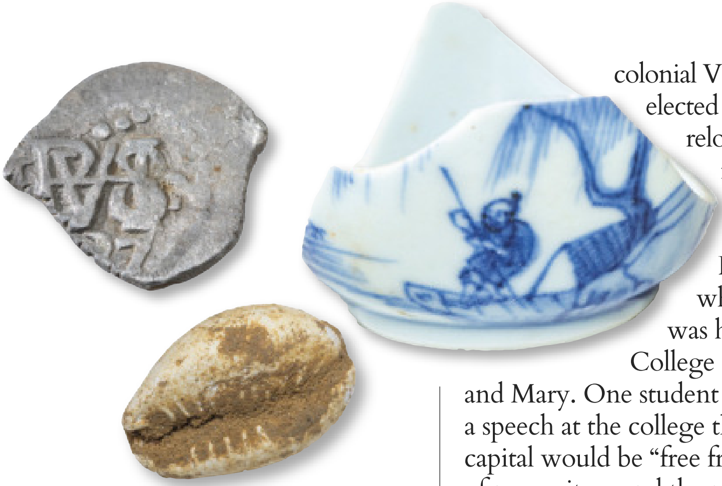
began at the site on a complex to house the more than 60 million artifacts recovered during the past century of excavation in Williamsburg. These finds are the latest in a surprising series of discoveries that have come as the town prepares to celebrate the 250th anniversary of key events that took place here at the start of the American War of Independence. One of the team's crucial goals has been to uncover the long-ignored part that enslaved Africans, who made up half of Williamsburg's colonial population, played in the political center of the oldest, largest, most populous, and richest of Britain's North American colonies.



Clockwise from top left: A Spanish silver half real coin, a fragment of a Chinese teacup, and a cowrie shell were found in the cellar of a seventeenth-century house in Williamsburg.

Williamsburg straddles a spine of land separating the watersheds of the broad York and James Rivers, which both flow into the Chesapeake Bay. Originally called Middle Plantation, the settlement was located at the midpoint of a 1620s wooden palisade. This fence divided the territory between English settlers and the Indigenous Powhatan Confederacy. Six miles to the south, in 1607, settlers had founded Jamestown, the first permanent English colony in the New World, on a low-lying malarial island surrounded by brackish water.

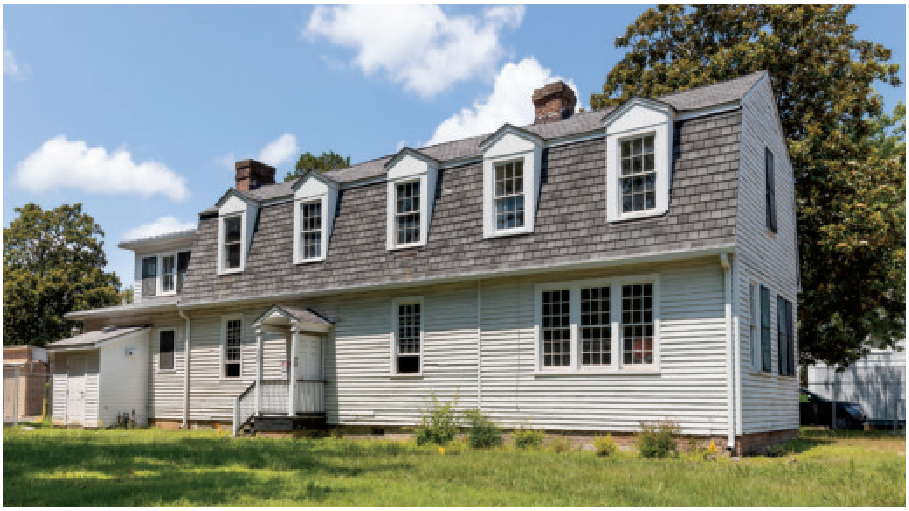
In 1699, Governor Francis Nicholson convinced the House of Burgesses—colonial Virginia's elected assembly—to relocate from this insalubrious environment to Middle Plantation, which by then was home to the College of William and Mary. One student claimed in a speech at the college that the new capital would be "free from the plague of mosquitoes and the noisome stinks and thick fogs of fenny, marshy, and swampy grounds," and imagined that it would someday "equal, if not outdo, Boston, New York, Philadelphia, Charleston, and Annapolis."

Nicholson drew up a suitably grand design for what was dubbed Williamsburg after the Dutch-born British king, William III (reigned 1689–1702). He centered the town on a mile-long, 99-foot-wide boulevard called Duke of Gloucester Street. At the street's western end stood the college. In 1705, enslaved laborers completed a large H-shaped brick building at its eastern end to serve as home for the House of Burgesses and the Governor's Council. By 1722, an elegant three-story governor's mansion rose at the end of a green. Called the Palace, it was the largest residence in the colonies. An octagonal powder magazine was built on the southern end of the town's market square to hold the colony's public munitions, and a sturdy courthouse anchored its northern end.

Despite these noteworthy buildings and the dreams of college students, Williamsburg would, in fact, never rival the capitals of other colonies such as Massachusetts, Pennsylvania, and South Carolina. The planters who dominated society mostly lived on remote tobacco plantations, and ships typically carried the lucrative leaf directly from private docks to

Archaeologists excavate the foundations of the seventeenth-century house.

Britain. When the general court and House of Burgesses met, wrote a British pastor, "there are balls and other amusements." Yet once the sessions were complete, the gentry returned to their plantations, "and the town is, in a manner deserted," noted another visitor. A young George Washington referred sarcastically to Williamsburg as "the great polis." Seventy years after it was founded, the town was still home to only about 2,000; Philadelphia was 20 times larger.



This building once housed the Bray School, Williamsburg's earliest school for Black children. This photograph was taken before the building was moved to a new location in 2023.

Enslaved Africans in Williamsburg largely descended from the Efik, Ibibio, and Igbo peoples from what are now Nigeria, Cameroon, and Gabon. By the 1770s, however, most had lived in Virginia for generations, and were English-speaking Christians. These people served drinks in the taverns and cooked the meals, washed the clothes, and drove the carriages of white residents and visitors, including Peyton Randolph, the first president of the Continental Congress. Historians estimate that, when the manor house that Gary's team excavated was built in the late 1660s, fewer than one in 10 Virginians was enslaved. By the time the home was pulled down less than a century later, that figure had grown to four in 10.

On April 19, 1775, a long-running dispute over taxes pitting American colonists against the British Parliament erupted into war at Lexington and Concord in Massachusetts. The conflict quickly spread south. In May 1776, a group of elite Virginians met in Williamsburg and voted unanimously to separate from the empire. They urged the Continental Congress convened in Philadelphia to follow suit. The Virginia resolution convinced other wavering colonies to support independence. Two months later, the 13 colonies adopted the Declaration of Independence. Thomas Jefferson, who was elected governor of the state of Virginia in 1779, oversaw the capital's move 50 miles west to Richmond, which was deemed safer from British assault. The old capital lapsed into obscurity.

That changed abruptly in 1926, when the oil tycoon John D. Rockefeller spent an afternoon strolling the city's sleepy streets. While other colonial centers had grown into large cities after the Revolutionary War, Williamsburg remained little altered. When Rockefeller visited, some 70 buildings survived from the colonial

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Clockwise from top: Clay marbles, a straight pin, and a thimble are among the artifacts unearthed at the original site of the Bray School.

era, and the surrounding area remained rural. A local pastor convinced the magnate to fund a multimillion-dollar effort to restore the town to its colonial past. Archaeologists were called in to identify the location and architectural style of structures that no longer stood, including the Palace. As they had in the eighteenth century, African Americans made up half of Williamsburg's population in the early twentieth century. Many were employed to excavate the sites of vanished structures.

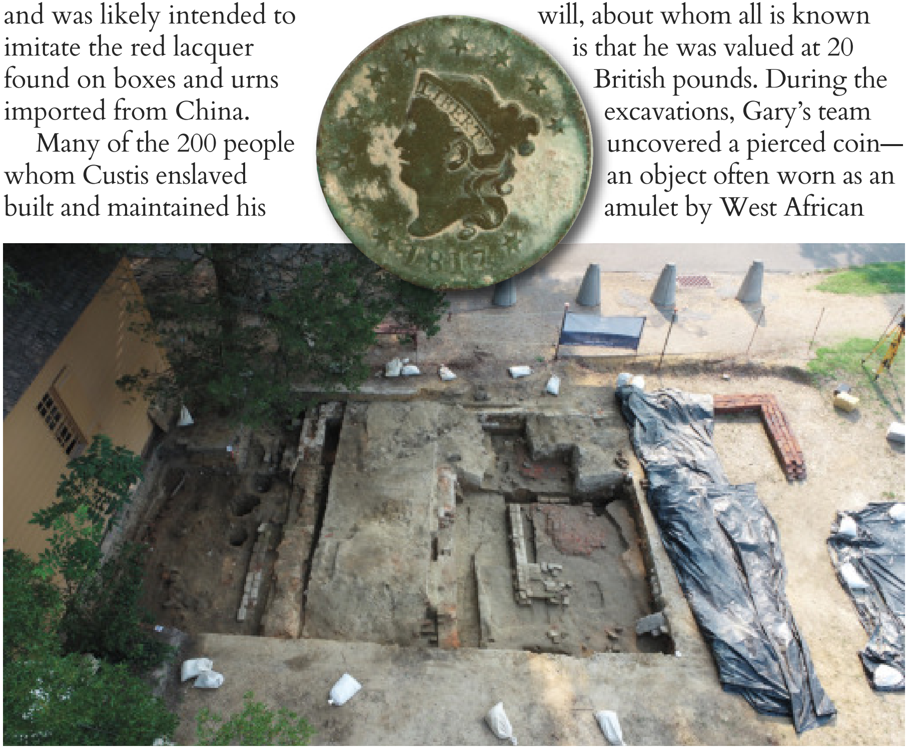
These excavations helped spur the development of colonial archaeology. "The early days were characterized by a desire just to find buildings," says Gary. "That meant mostly digging long trenches to locate brick foundations." Later efforts centered on investigating the daily lives of Williamsburg's colonial-era white residents and identifying the goods and tools they used. At the site of Shields Tavern, for example, archaeologists in the 1980s uncovered blue-and-auburn Delftware imported from the Netherlands emblazoned with images of fish.

More recently, archaeologists have used less invasive methods, including ground-penetrating radar and pollen analysis, to learn about the city's high-status residents. For the past four years, they have focused on an elaborate ornamental garden built by John Custis IV, one of Virginia's wealthiest men and the first father-in-law of Martha Dandridge Custis, the future wife of George Washington. The garden was swallowed up soon after Custis' death in 1749 as the colonial capital expanded, but researchers have been able to study an area of approximately an acre that was originally enclosed by thick red cedar posts. They have revealed that the garden's grounds included curved beds, gravel paths, and a broad central walkway, which, pollen analysis has shown, was once lined with peach and cherry trees. While common in Britain, perfectly ordered landscapes such as these were rare in the colonies. The team has also uncovered fragments of urns painted red—the paint has been traced to Amsterdam and was likely intended to imitate the red lacquer found on boxes and urns imported from China.

Many of the 200 people whom Custis enslaved built and maintained his vast garden. These people included "A Negro man Anthony" listed in his will, about whom all is known is that he was valued at 20 British pounds. During the excavations, Gary's team uncovered a pierced coin—an object often worn as an amulet by West African

CHILD
ADULT

These blank grave markers were made to mark the graves of people reinterred in 2024 at the site of the first Baptist church founded by Black Americans.



Foundations of the original early nineteenth-century Baptist church building, as well as those of a replacement brick structure dating to 1856, are visible here. An 1817 one-cent coin (top) was found next to the original building.

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people enslaved in the Americas—along with the remains of two headless chickens and a cow's foot, all buried under a fence post. Such objects may have been hidden to attract good luck or discourage malevolent spirits. The finds offer evidence that many enslaved Virginians maintained a connection with their homeland long after they had adopted the language and religion of their enslavers.

Black Virginians of the colonial period were largely illiterate and left behind few letters, accounts, or diaries. They also typically had few possessions. Most lived and worked in outbuildings rather than sleeping and eating in dedicated barracks; not a single colonial-era enslaved person's residential quarters have been identified in Williamsburg. This scarcity of both written and archaeological evidence has made it extremely challenging to recover details of how enslaved people lived, including such basic facts as what they ate and where they slept.

Furthermore, officials at Colonial Williamsburg long glossed over the fact that half of those who lived at a site famous for its role in the fight for liberty were enslaved persons. When the city's historic district was reconstructed in the 1920s and 1930s, hundreds of these people's descendants were displaced. It wasn't until the 1980s that Black characters were included as part of the reenactments performed for visitors. "So much of the Black experience was erased," says Janice Canaday, Colonial Williamsburg's African American community engagement manager. "We knew they had been here, but there wasn't a large conversation about it."

That has now changed. In 2002, Terry Meyers, then an English professor at the College of William and Mary, identified a building on campus as the site of the Bray School, the oldest known American schoolhouse for Black children. During a 1756 visit to Williamsburg, Benjamin Franklin had called for Black children to be educated. Friends of a deceased Anglican clergyman named Thomas Bray, who had also championed education for Black people, helped organize the institution, which opened in 1760 in a two-story frame building. Before it closed in 1774, some 300 to 400 Black children had been enrolled.

The College of William and Mary bought the structure and moved it to a lot down the street in 1930. A large college dormitory was later built on the original site. Dendrochronological analysis of the building's timbers

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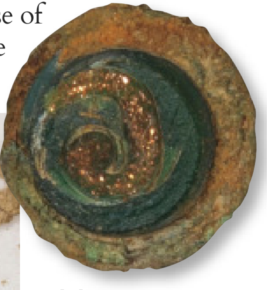
conducted in 2020 showed that it had been built in 1759 or 1760. This confirmed the school's construction date as noted in contemporaneous documents. In 2023, the Bray School building was moved again, this time to a lot in Williamsburg's historic district, to be refurbished and opened to the public. "This new location will prevent the denial of our story, and will empower African American children," Canaday says.

In the meantime, archaeologists working in the cramped crawl space beneath the dormitory and in its backyard have unearthed objects related to the school, including parts of dolls, thimbles and straight pins likely used to teach young girls to sew, and the largest collection of eighteenth-century marbles found in Williamsburg. According to Gary, the marbles may have been used as counting tools as much as for games. The team also found more than 60 pencils, but these proved to date to the nineteenth century. Scholars disagree on whether the school was truly an educational facility or more a place where enslaved children too young to work were kept out of the way. Gary plans to excavate beneath the dormitory in the future, which may help resolve such lingering questions.

The Bray School building's current location is adjacent to the site of the first Baptist church founded by Black Americans. The congregation was formed by enslaved people in secret at a nearby plantation in 1776. In the early nineteenth century, its members obtained a lot in a marshy ravine on the southern edge of town. By 1818, a small wooden frame church there had become the center of the African American community, but it was destroyed by a tornado in 1834. It was rebuilt two decades later using brick. A century after that, Colonial Williamsburg bought the land and demolished the church to look for remnants of eighteenth-century structures. None were found, and the empty land became a parking lot. Plans are in place for a new church to be built nearby.

In 2020, the congregation debated whether to ask Colonial Williamsburg archaeologists to search for the original sanctuary. Canaday says that some members distrusted the foundation, but they ultimately opted to proceed with the project. Using ground-penetrating radar, archaeologists revealed the base of a small structure built atop fill in



Civil War–era artifacts found in Williamsburg include a vest or jacket button (above), mid-nineteenth-century five-dollar gold coins (left), and a toothbrush (below).

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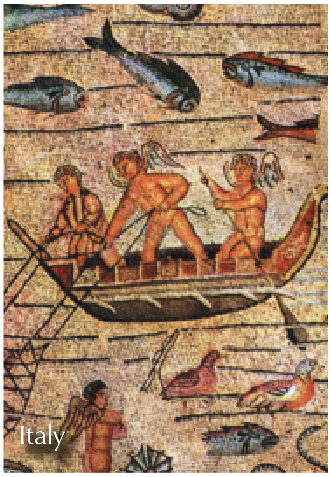
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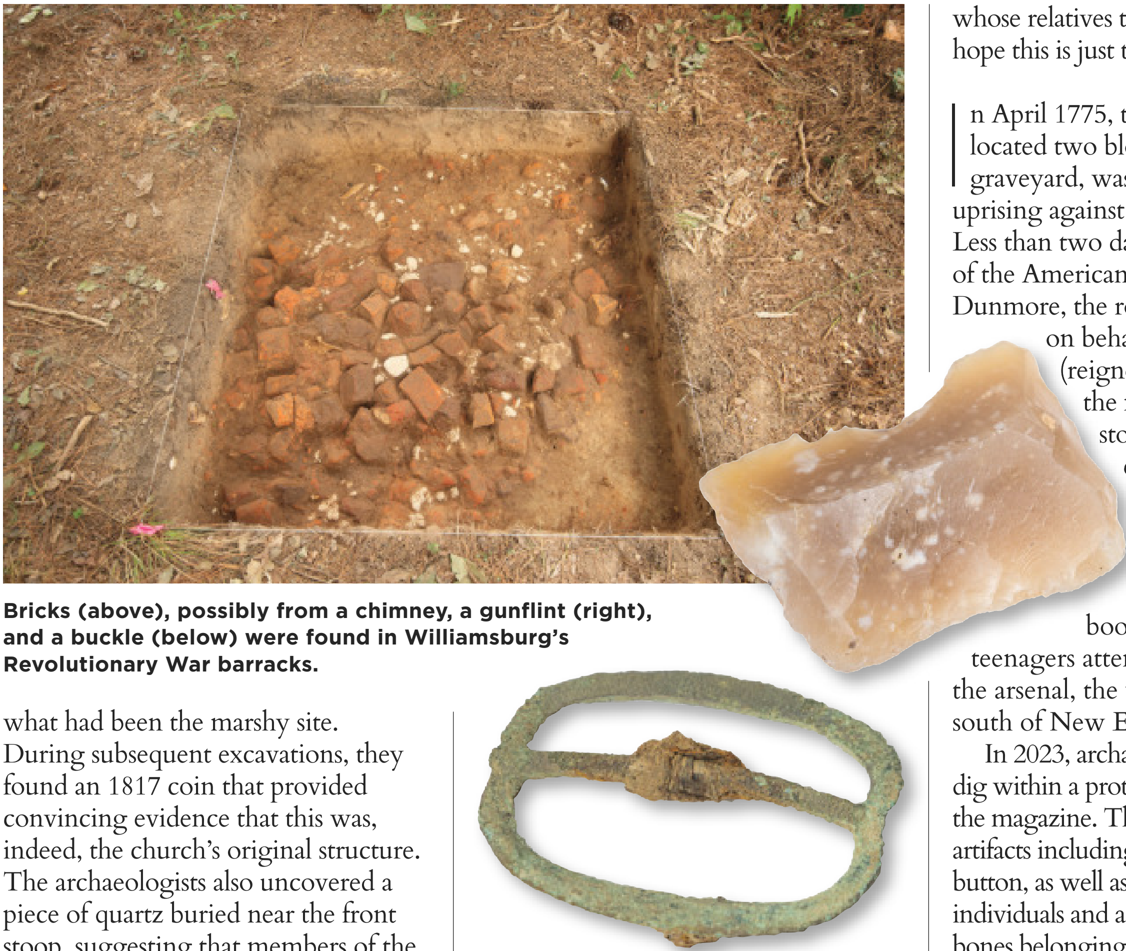

Bricks (above), possibly from a chimney, a gunflint (right), and a buckle (below) were found in Williamsburg's Revolutionary War barracks.

what had been the marshy site. During subsequent excavations, they found an 1817 coin that provided convincing evidence that this was, indeed, the church's original structure. The archaeologists also uncovered a piece of quartz buried near the front stoop, suggesting that members of the congregation maintained West African spiritual traditions long after they had embraced Christianity. Similar crystals have been found at other colonial sites, including as part of a "diviner's kit" used to predict the future that was unearthed in 1990 at a Maryland mansion dating to the 1770s.

After speaking with Fannie Epps, a 102-year-old congregant who recalled that there had been an old burial ground behind the long-demolished brick church, archaeologists identified the graves of 62 people. Contentious discussions among church members ensued, and a majority eventually approved a plan to study these people's remains. Gary's team took DNA samples from three of the individuals. Their bones had badly deteriorated in the damp soil, but a sample of a bone from one individual's ear showed that the person was of West African descent. Using isotope analysis, the team learned that one person had subsisted in his final days on a bland diet of oats and corn, while another had eaten a far more varied menu consisting of vegetables and meat. This provided rare insight into the types of foods available to and the dietary habits of the community.

On June 19, 2024—Juneteenth, the holiday that celebrates Black emancipation—at a ceremony held at the church's current location, archaeologists unveiled blank granite markers, which were later placed over the burials. Canaday says that some descendants of the original congregation are eager to pursue additional research. "We want to know whose relatives they are," she says. "We hope this is just the beginning."

In April 1775, the powder magazine, located two blocks from the graveyard, was the site of the first uprising against Britain in Virginia. Less than two days after the first battles of the American Revolution, Lord Dunmore, the royal governor, acting on behalf of King George III (reigned 1760–1820), seized the magazine's gunpowder stores. Outraged white citizens protested, and the incident hardened attitudes toward the Crown. Two months later, a booby trap injured three teenagers attempting to break into the arsenal, the war's first casualties south of New England.

In 2023, archaeologists began the first dig within a protective wall surrounding the magazine. There they uncovered artifacts including a vest or jacket button, as well as the remains of three individuals and a small pit containing bones belonging to three amputated legs. Based on artifacts discovered with the remains, the dead proved to be Confederate soldiers. One young man was 15 years old and was buried with a toothbrush and snuff bottle. A five-dollar gold coin next to another's hip bone likely had been sewn into his waistband and went undetected before his interment. One of the amputated leg bones had a musket ball embedded in it, while a second was shattered. Gary believes that these people almost certainly perished in a nearby church that served as a hospital during an 1862 Civil War battle. By analyzing their skeletons and consulting a registry of the injured and dead created by a local woman, researchers have narrowed down those buried in the magazine's yard from a list of 60 known casualties. Gary intends to conduct DNA testing

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and track down living descendants before their remains are reburied in a nearby cemetery.

Although Williamsburg was the gathering place for Virginia colonists advocating for American independence, almost nothing is known of its military role during the Revolution, which ended in 1781 when Lieutenant General Charles Cornwallis surrendered to the combined American and French armies at nearby Yorktown. In 2023, archaeologists dug a few test pits prior to construction of a large sports complex about a mile north of Williamsburg's historic center. They came upon brick chimney bases as well as Revolutionary War–era artifacts including gunflints, uniform buckles, a horse bit, and shoes, as well as parts of combs and muskets.

These finds support a few written mentions of American barracks having been built in the vicinity in 1776 and 1777 to house up to 2,000 men and 100 horses. The barracks' location seems to be the precise spot noted on a map from the time, which includes 13 unidentified dots. Archaeologists suggest the dots may represent bunkhouses, or perhaps smaller cabins that served as officer's quarters. Contemporaneous records state that Cornwallis destroyed the buildings on the eve of the Battle of Yorktown. The site, which covers an estimated three to four acres, has remained largely undisturbed. "This is a huge find for anyone interested in the American Revolution," says archaeologist John Seidel, executive director of Maryland's St. Mary's City, site of an early English settlement. "We know of very few barracks, and most have been destroyed by urban development." Those that have survived show that, contrary to popular mythology, American troops were surprisingly well supplied and housed. Seidel says that the typical barracks was a two-winged building centered on a large chimney and could house a few dozen men.

Over the past century, archaeology in the old Virginia capital has evolved from an effort to rebuild a few structures belonging to its elite residents to a concerted effort to understand the lives of all the city's residents, both free and enslaved. "With this new knowledge, and the trust we are building together," says Canaday, "we can move forward and find more stories." ■

Andrew Lawler *is a contributing editor at* ARCHAEOLOGY.

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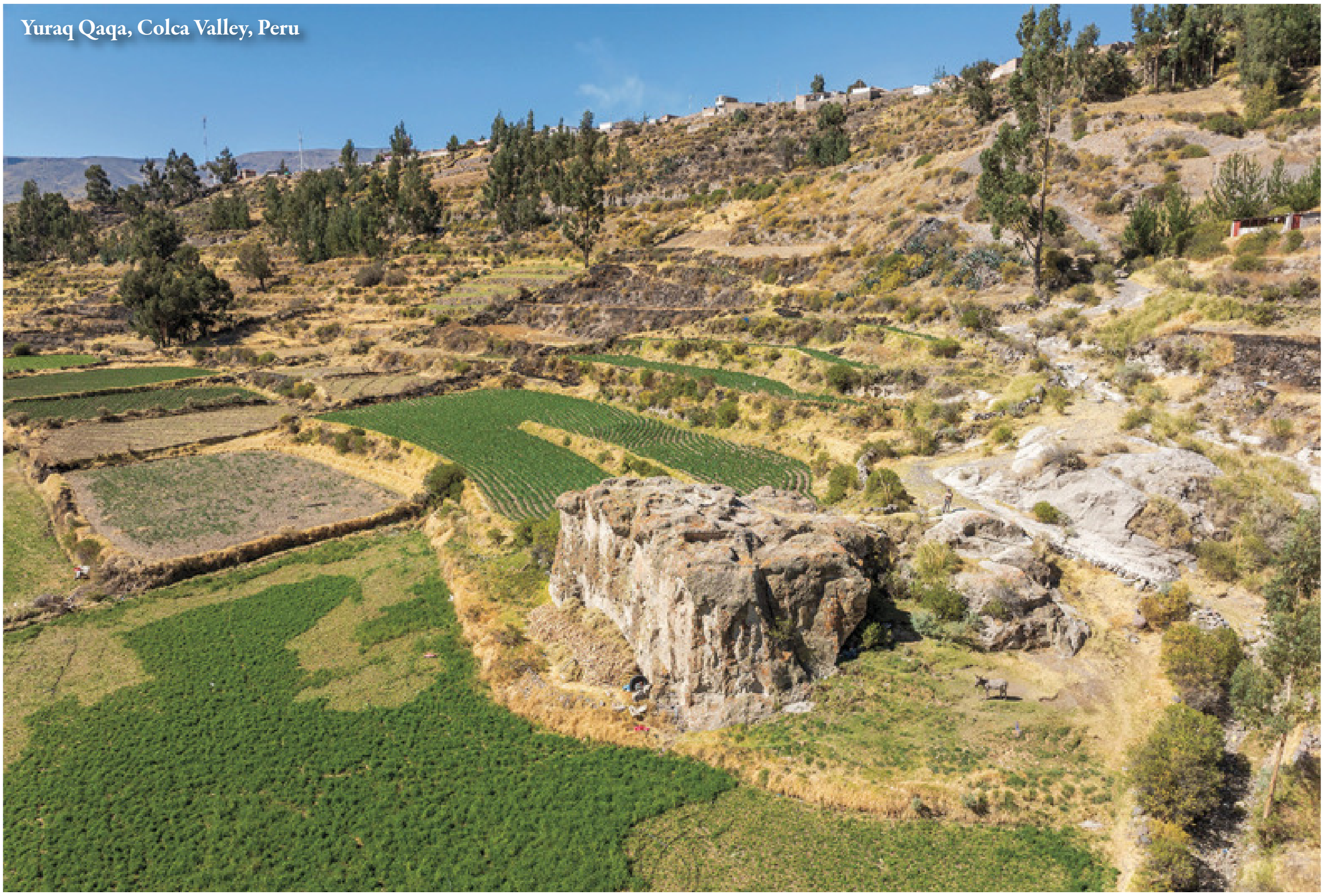

Yuraq Qaqa, Colca Valley, Peru

EXCAVATE

The AIA's Cultural Heritage Committee recently chose the 2025 winner of the Site Preservation Grant. This competitive award aims to enhance global efforts to preserve threatened archaeological sites and landscapes and to promote awareness of the need to safeguard places of archaeological heritage. The projects supported by the grant directly maintain archaeological sites, engage local residents, and offer educational programs to create a positive impact on these communities and on the discipline of archaeology as a whole. This year's winner is Lauren E. Kohut, assistant professor of environmental studies and anthropology at Winthrop University, who works in the area of Yuraq Qaqa in Peru's Colca Valley.

Yuraq Qaqa is a megalithic rock art landscape shaped by centuries of agricultural experimentation and innovation prior to Spanish colonization. Created during a time of climate volatility between 1100 and 1450, this extraordinary site was carved as a three-dimensional topographic model depicting agricultural terraces, irrigation canals, and other aspects of geology and the built environment. It functioned as a living laboratory of environmental planning and offers invaluable insights into how communities navigated challenges posed by climate change.

As the Colca Valley faces new economic, social, and environmental challenges, Yuraq Qaqa stands as a powerful model for sustainable tourism that supports local communities while preserving the achievements of their precolonial ancestors.

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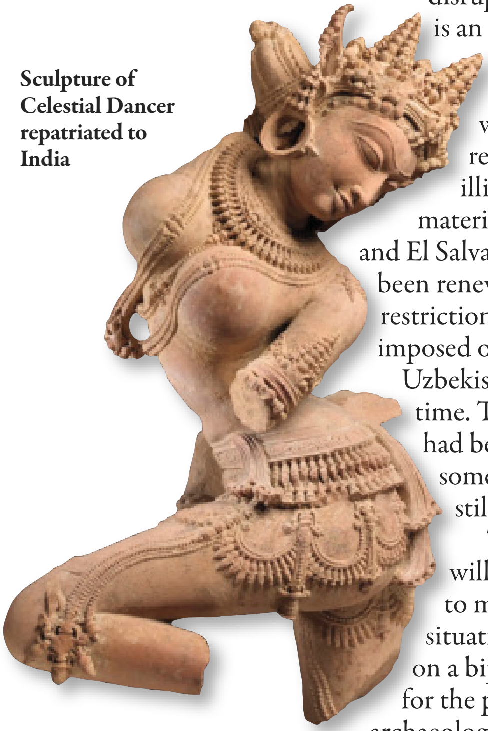
FROM THE FIELD

ADVOCATE

In September 2024, the United States returned 297 illegally obtained archaeological artifacts to India. Preventing the theft and trafficking of archaeological finds is a major concern of professional archaeologists and is addressed by the UNESCO 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property. Foreign countries must petition the U.S. Department of State under this convention to prevent the importation of commonly looted objects. Governments must renew these requests every five years.

The AIA supports the convention and discourages the looting of archaeological sites. The U.S. Cultural Property Advisory Committee reviews the requests and makes a recommendation on whether to impose import restrictions. The change in administration in January 2025 caused a disruption in what is an established process. At the time of this writing, import restrictions on illicitly exported material from Jordan and El Salvador have now been renewed, and import restrictions have been imposed on material from Uzbekistan for the first time. These requests had been pending for some time; others are still waiting.

The AIA will continue to monitor the situation and advocate on a bipartisan basis for the protection of archaeological material. Only by denying traffickers access to illegal markets can we hope to disincentivize illicit trade and keep artifacts in their local context, where archaeologists can best study them for the benefit of all.



Sculpture of Celestial Dancer repatriated to India

Maniki Harbor, Greece

EDUCATE

In May and June 2024, Sophia Andrade, a recipient of a Jane C. Waldbaum Archaeological Field School Scholarship, spent five weeks participating in the Yeronisos Island Expedition in Cyprus, based in the coastal village of Agios Georgios. Working as a trench supervisor of the excavations at Maniki Harbor and later on Yeronisos Island enabled her to hone her archaeological skills.

When asked about her field work experience last year and whether it created a powerful connection to the past, Sophia said, "The earth contained secrets of an ancient past, but for me, digging in Cyprus unveiled the ways of life of a society far removed from my own reality. These five weeks taught me about archaeological methods and history, but above all I learned to live with a kind of vigor and joy that is only found at Yeronisos."

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ARTIFACT

BY JARRETT A. LOBELL

Human eyes are as individual as fingerprints. Like those of a living person, the eyes of this ceramic figurine discovered recently at the site of Xanab Chak in the Puuc region of Mexico's Yucatán Peninsula are unique. The figurine is the only one to have been found at the site, and indeed the only Preclassic example ever found in the Puuc region. Although it shares some similarities with examples from southern Maya sites in Belize and Guatemala, including a lack of genitalia, a mouth with parted lips and a slight snarl, and a flat back, its eyes are highly unusual.

"At first we thought the figurine had four eyes," says archaeologist Ken Seligson of California State University, Dominguez Hills. "That seemed really strange." Eventually Seligson and his team discerned that the whites and pupils of the figure's eyes are represented in a highly stylized manner. In combination with the bowl the figure is holding—a kind of vessel resembling a bottle gourd that was produced in the Puuc region—the eyes suggested to Seligson that the figurine had been made locally, because they differ so greatly from the more realistic way that eyes are rendered in the southern Maya region.

This realization—that the figurine probably wasn't acquired through trade, but that a local artist in Xanab Chak might have created it—was unexpected. The village was first settled in about 1000 B.C. and was likely one of the earliest agricultural communities in the region. Until recently, scholars believed it was a cultural backwater disconnected from early Maya sites to the south, but the figurine provides evidence to the contrary. "Someone had probably gone to Guatemala and seen that they were making figurines and carried that technology back with them, but made it their own," says Seligson. "It surprised us that a tiny agricultural village like Xanab Chak was plugged into wide-ranging networks so early on in the Maya period."

WHAT IS IT:
Figurine

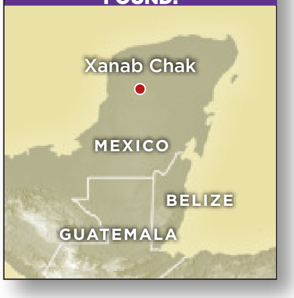
MATERIAL:
Ceramic

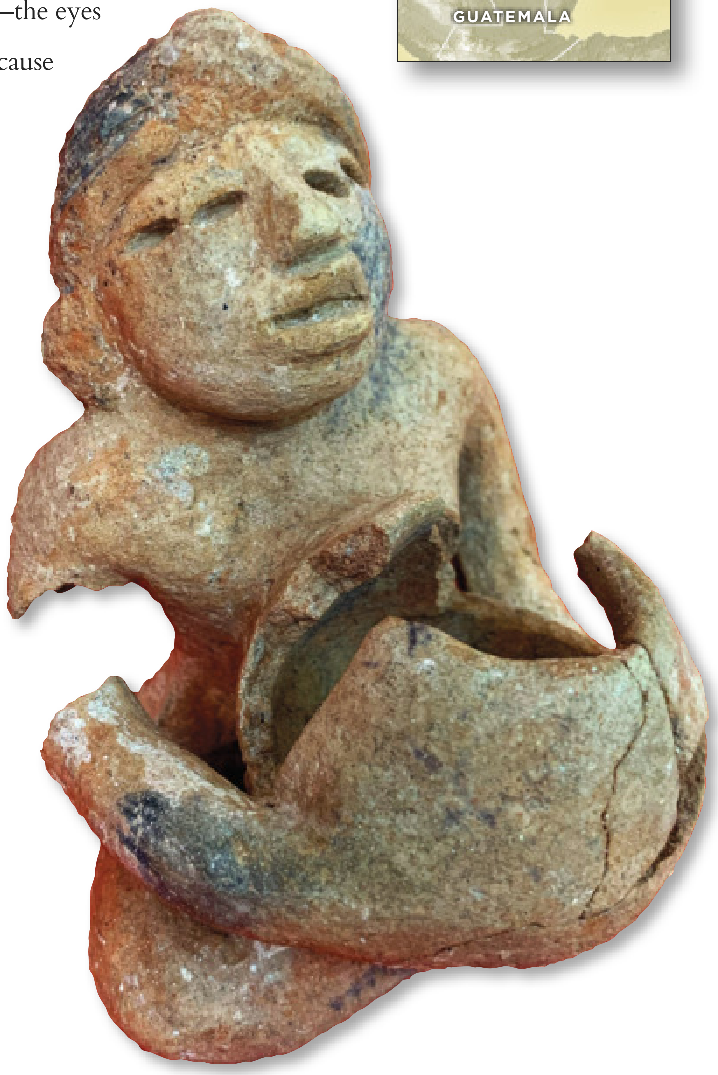
CULTURE:
Maya

DATE:
Middle Preclassic period, ca. 700–500 B.C.

DIMENSIONS:
5 inches tall

FOUND:





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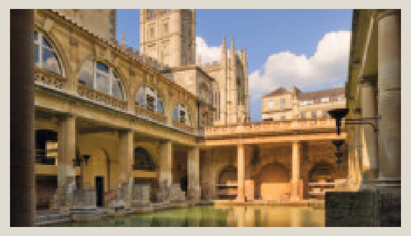
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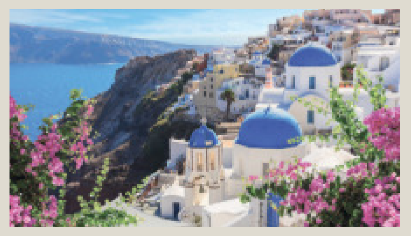
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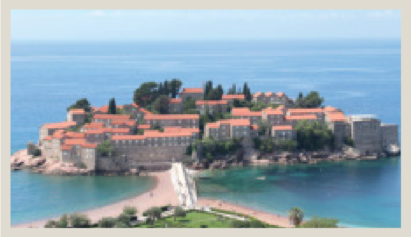
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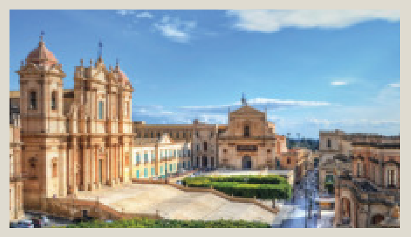
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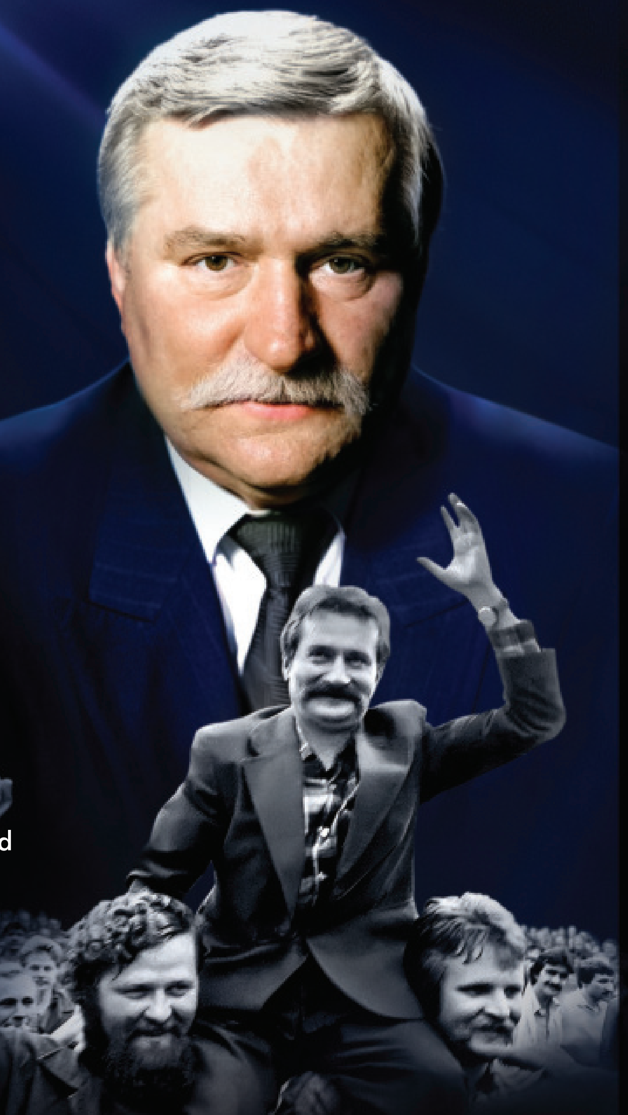

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